

# Service Service Service



EPA POLLUTION PREVENTER

Smart Interface/PnP/Sliding Height Adjustment  
High Bright Picture/Auto Picture Adjustment/Wide Viewing Angle



150P3A /00C (CPT L G panel)  
150P3C/P3D/P3E

# Service Manual

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Horizontal frequencies  
30 - 61 kHz

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ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

# Important Safety Notice



◀◀ Go to cover page

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company\*\* Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

\* \* Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

## WARNING

Critical components having special safety characteristics are identified with a  by the Ref. No. in the parts list and enclosed within a broken line\* (where several critical components are grouped in one area) along with the safety symbol  on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design. Servicer assumes all liability.

\* Broken Line



### FOR PRODUCTS CONTAINING LASER :

- DANGER-** Invisible laser radiation when open.  
AVOID DIRECT EXPOSURE TO BEAM.
- CAUTION-** Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- CAUTION-** The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

### Take care during handling the LCD module with backlight unit

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person's body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a soft material. (Cleaning with a dirty or rough cloth may damage the panel.)

## Technical Specifications

LCD Panel	
Screen type	: LG Active matrix - TFT LCD
Screen dimensions	: 15 inches (diagonal)
Preset display area	
Horizontal	: 304.1 mm
Vertical	: 228.1 mm
Pixel pitch	: 0.297 x 0.297 mm
Viewing angle (CR>= 10)	: Vertical 90 degree, Horizontal 120 degree typical,
Display Colors	: 6 bits interface (16M colors)
SCANNING	
Horizontal scan range	: 30 kHz to 61 kHz (automatic)
Vertical scan range	: 56 Hz to 76 Hz (automatic)
Optimal preset resolution	: 1024 x 768 at 60Hz
Highest preset resolution	: 1024 x 768 at 75Hz
Video	
Video dot rate	: 79MHz
input impedance	
-Video	: 75 ohms
-Sync	: 5 K6Ohm
Input signal levels	: 700m Vpp
Synchronization input signals	: Separate horizontal and vertical / composite ;TTL level, positive or negative, Sync On Green
Input Frequency	: XGA Hsync 48-61 KHz,Vsync 60-76Hz(N.I.) SVGA Hsync 35-50 KHz,Vsync 56-75Hz(N.I.) VGA Hsync 31-38 KHz,Vsync 60-76Hz(N.I.)
Video interface	: Dual input:Both Analog(D-Sub) and DVI-I(Digital only) are available It can be switching via OSD selection
Resolution and Preset Modes	
Maximum	: 1024 x 768 at 75Hz
Recommended	: 1024 x 768 at 60Hz
Physical Characteristics	
Dimensions	
Height	: 343 mm
Depth	: 165 mm
Width	: 399 mm
Weight (monitor only)	: 4. 7 kg
Tilt and swivel angle of pedestal	: + - 175°
Height adjustment range	: 50mm
Portrait display	: 90° rotation counter colockwise
Forward / Backward	: -5° / 25°
AC input voltage / frequency	: 90 to 264 VAC / 50 or 60 Hz
Power consumption	: 23 W (typ.)
Temperature	
Operating	: 5 C to 40 C (41 F to 104 F)
Humidity	
Operating	: 20% to 80%
System MTBF	: 50K Hrs(CCFL 40Khrs)

## Pin Assignment

DVI-D connector  
(Digital Visual Interface - Digital)



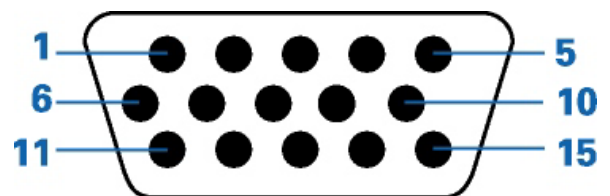
## Pin Assignment

The digital only connector contains 24 signal contacts organized in three rows of eight

contacts. Signal pin assignments are listed in the Table:

Pin No.	Signal Assignment	Pin No.	Signal Assignment	Pin No.	Signal Assignment
1	T.M.D. S. Data2 -	9	T.M.D.S. Data1 -	17	T.M.D.S. Data0 -
2	T.M.D.S. Data2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2/4 Shield	11	T.M.D.S. Data1/3 Shield	19	T.M.D.S. Data0/5 Shield
4	No connect	12	No connect	20	No connect
5	No connect	13	No connect	21	No connect
6	DDC Clock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground (for +5V)	23	T.M.D.S. Clock+
8	No connect	16	Hot Plug Detect	24	T.M.D.S. Clock -

2. The 15-pin D-sub connector (male) of the signal cable



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	DDC+5V
2	Green video input	10	Logic ground
3	Blue video input	11	Identical output connected to pin 10
4	Identical output connected to pin 10	12	Serial data line (SDA)
5	Cable detect	13	H. Sync / H+V
6	Red video ground	14	V. Sync
7	Green video ground	15	Data clock line (SCL)
8	Blue video ground		

◀◀ Go to cover page

## Automatic Power Saving

If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce power consumption when power saving function active. And if an input from keyboard, mouse or other input devices is detected, the monitor will automatically "wake up". The following table shows the power consumption and signaling of this automatic power saving feature :

Power Management Definition						
VESA's mode	VIDEO	H-SYNC	V-SYNC	POWER USED	POWER SAVING( % )	LED COLOR
ON	Active	Yes	Yes	< 23 W	0 %	Green
Stand-by	Blanked	No	Yes	< 3 W	83.3 %	Amber
Suspend	Blanked	Yes	No	< 3 W	83.3 %	Amber
OFF	Blanked	No	No	< 3 W	90 %	Amber

This monitor is Environmental Protection Agency (EPA) Energy Star compliant and TCO'99 power management compatible.

\*Zero power consumption in OFF mode can only be achieved by disconnecting the mains cable from the monitor.



ENERGY STAR® is a U.S. registered mark. AS AN ENERGY STAR PARTNER, PHILIPS HAS DETERMINED THAT THIS PRODUCT MEETS THE ENERGY STAR GUIDELINES FOR ENERGY EFFICIENCY.

## Data Storage

### Factory preset mode:

This monitor has 14 factory-preset modes as indicated in the following table :

Mode	Resolution	H. freq. / V. freq	Standard
1.	640 x 350	31.469Khz/70.087Hz	VGA
2.	720 x 400	31.469Khz/70.087Hz	VGA
3.	640 x 480	31.469Khz/59.940Hz	VGA
4.	640 x 480	35.000Khz/66.667Hz	Macintosh
5.	640 x 480	37.861Khz/72.809Hz	VESA
6.	640 x 480	37.500Khz/75.000Hz	VESA
7.	800 x 600	35.156Khz/56.250Hz	VESA
8.	800 x 600	37.879Khz/60.317Hz	VESA
9.	800 x 600	48.077Khz/72.188Hz	VESA
10.	800 x 600	46.875Khz/75.000Hz	VESA
11.	832 x 624	49.700Khz/75.000Hz	Macintosh
12.	1024 x 768	48.363Khz/60.004Hz	VESA
13.	1024 x 768	56.476Khz/70.069Hz	VESA
14.	1024 x 768	60.023Khz/75.029Hz	VESA

Meanwhile, it also reverse 14 sets data space available for user storage new timings data.

## Philips Switchable adapter for Apple Video Connectors MAC Adaptor ( For Reference Only )

PHILIPS/MAGNAVOX Colour Monitor		Resolution		Fh(KHz)	Fv(Hz)
Model	Size	640 x 480 (Apple 13" Color)	832 x 624 (Apple 16" Color)	35.0	67
4CM42XX & CM9214	14"	●	●	49.7	75
4CM82XX, 1557AS, 1520AS & BRILLIANCE1520	15"	●	●	60.2	75
4CM10XX, 4CM97XX, 4CM47XX & CM 4017	17"	●	●	68.7	75
4CM60X9, 4CM67X9, 1764DC & CM9217	17"	●	●		
4CM6088 & 1762DT	17"	●	●		
4CM6282, 1720DC & BRILLIANCE1720	17"	●	●		
4CM27X9 & 20CM64	20"	●	●		
C2082 DAS, 2020DC & 2082DC	20"	●	●		
C2182 DAS, 2182DC, BRILLIANCE 2110 & BRILLIANCE 2120	21"	●	●		
DIP Switch on Adapter		S1	S2	S3	S4
		OFF	OFF	ON	ON
		ON	OFF	ON	OFF
		OFF	ON	ON	OFF
		ON	ON	ON	ON



This mode is supported by Apple Quadra 800 and Centris 610/650 Systems  
Apple is a registered trademark of Apple Computer, Inc.



Please follow the steps to connect your LCD Monitor to PC.

1. Lay down the set with panel on bottom side and lift the base as the Attached picture



2. Put to both thumbs on the top of base, and other fingers on upper area of the recess on the back cover. As attached picture.



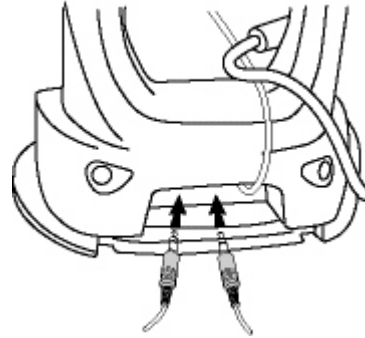
3. Use thumbs to push the base until the base moved to position where the wings of hinge could be take out from back cover as attached picture.



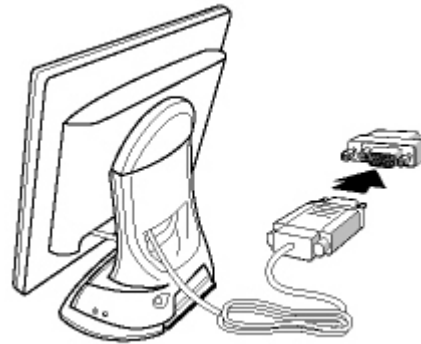
4. Thread power cable through the hole at the bottom of the stand, and plug onto monitor firmly.



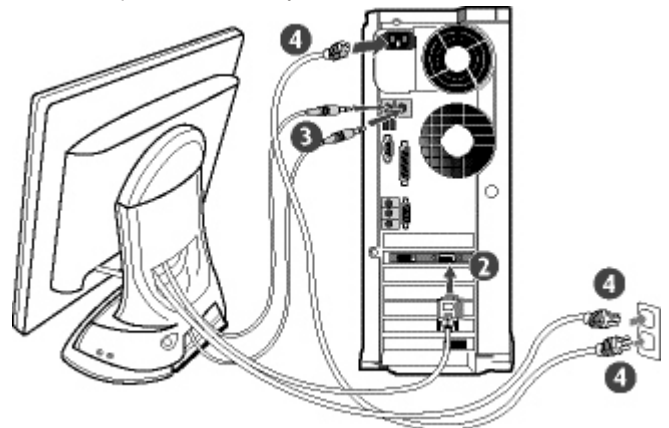
5. Connect microphone and audio cables onto the rear side of base if any. Double check all cables connection closely. Make sure they are all connected well.



6. If you use an Apple Macintosh, you need to connect the special Mac adapter to one end of the monitor signal cable.



7. Pull back up the monitor body.



8. Connect to PC

- (1) Turn off your computer and unplug its power cable.
- (2) Connect the monitor signal cable to the video connector on the back of your computer.
- (3) Plug the power cord of your computer and your monitor into a nearby outlet.
- (4) Turn on your computer and monitor. If the monitor displays an image, installation is complete.

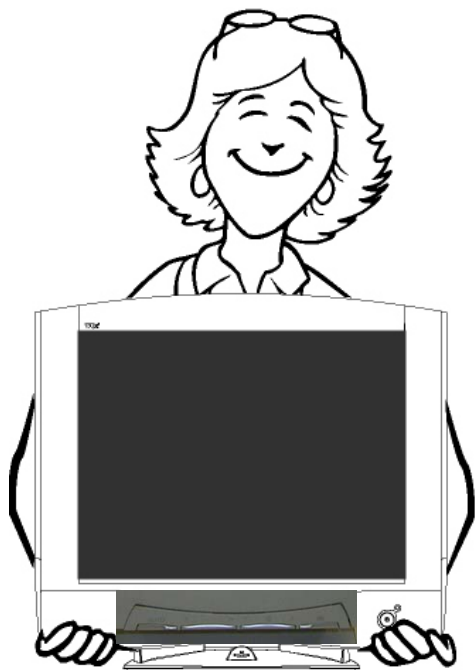
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## Installation Locations

### Avoid Heat and Extreme Cold

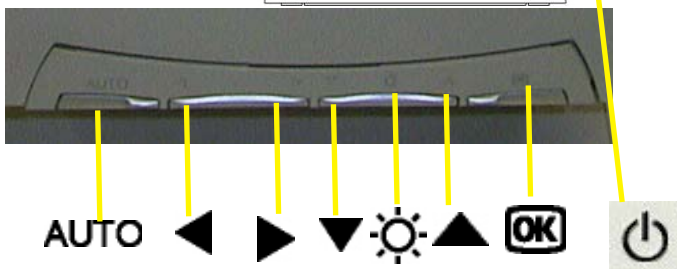
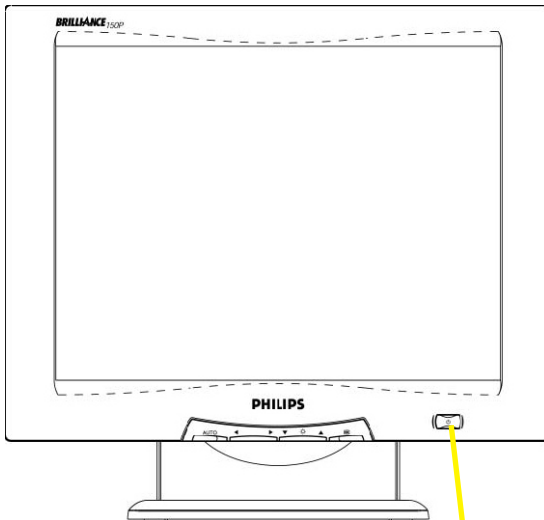
1. Do not store or use the LCD monitor in locations exposed to heat, direct sunlight, or extreme cold.
2. Avoid moving the LCD monitor between locations with large temperature differences. Choose a site falling within the following temperature and humidity ranges.  
Temperature: 5-35°C 41-95°F  
Humidity: 20-80% RH
3. Do not subject the LCD monitor to severe vibration or high impact conditions. Do not place the LCD monitor inside a car trunk.
4. Take care not to mishandle this product by either knocking or dropping during operation or transportation.
5. Do not store or use the LCD monitor in locations exposed to high humidity or a dusty environment. Also do not allow water or other liquids to spill on or into the LCD monitor

## Correct handling of the monitor



1. When handling the monitor, grip the bottom firmly with both hands and ensure that the front panel faces outward before lifting. Please refer to the diagram on the right.
2. Handling the monitor with care prevents scratching and damage. If the monitor becomes damaged, immediately disconnect the power from the unit and have it checked by a qualified service person before using it again.
3. To prevent fire or electrical shock, do not drop the monitor.
4. When moving the monitor, be sure to unplug all power cords in order to avoid injury or damage to the equipment.

Front View



▲▼ UP and DOWN buttons are used when adjusting the OSD of your monitor

◀▶ LEFT and RIGHT buttons, like the UP and DOWN buttons, are also used in adjusting the OSD of your monitor.

☀ BRIGHTNESS hotkey. When the UP and DOWN arrow buttons are pressed, the adjustment controls for the BRIGHTNESS will show up.

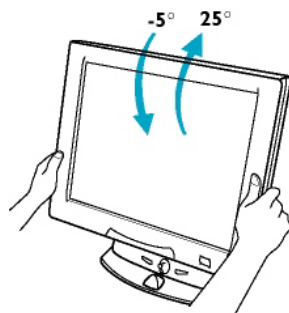
OK OK button which when pressed will take you to the OSD controls.

⏻ POWER button switches your monitor on.

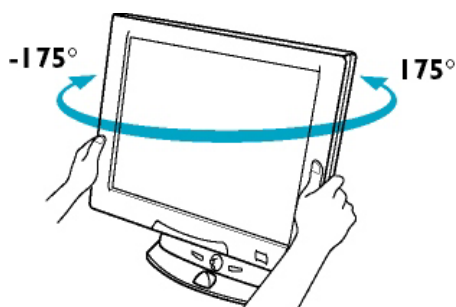
**AUTO** Automatically adjust the horizontal position, vertical position, phase and clock setting.

## Physical Function

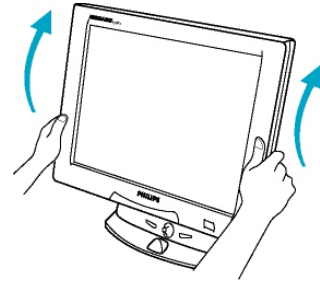
### 1) Tilt



### 2) Swivel

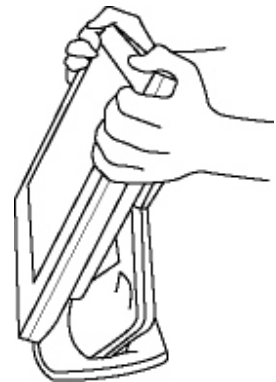


### 3) Height adjustment

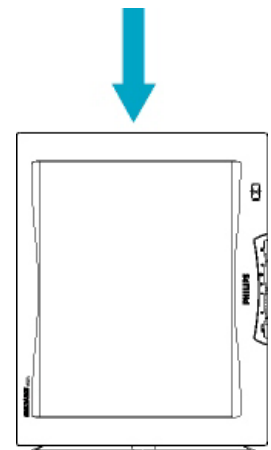
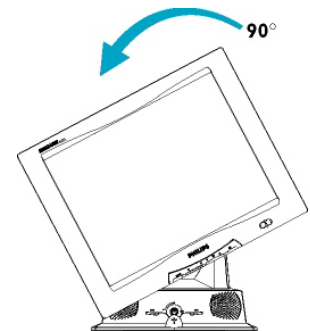


### 4) Pivot

Turn monitor from landscape view to portrait view  
4.1) Tilt the monitor body at an angle



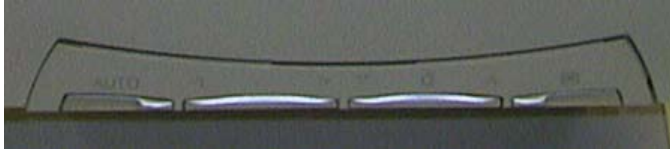
4.2) Rotate the monitor body 90 degrees counter clockwise




## Advanced control of OSD








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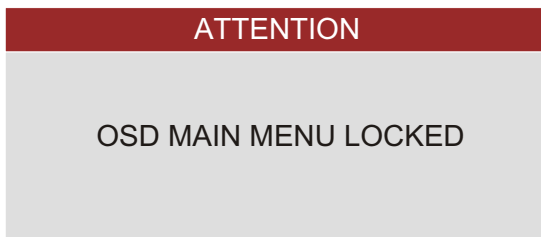
### Front control panel





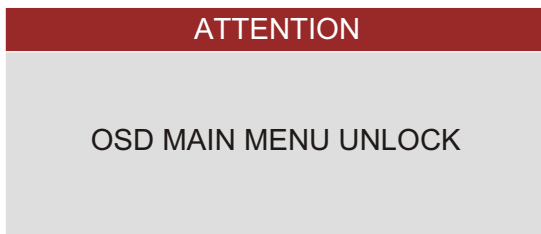
Recover attention signals by pressing  button for more than 10 seconds without video signal input.

### To Lock/Unlock OSD function


The OSD function can be locked by pressing  button for more than 10 seconds, the screen shows following windows for 3 seconds. Everytime when you press  or  button, this message appears on the screen automatically. The  &  (brightness),  &  (mute) hotkey are still functional for brightness and mute expectively while OSD locked

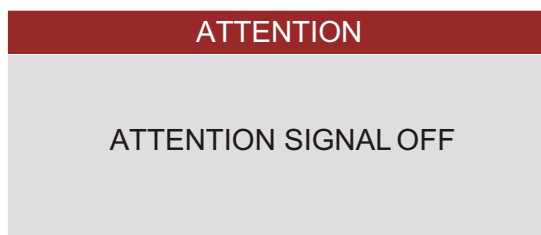


Locked OSD function can be released by pressing  button for more than 10 seconds. While press  button for OSD unlocked purpose, the screen will keep showing OSD MAIN MENU LOCKED until OSD function unlocked and screen automatically shows following window for 3 seconds.



### Switch ON/OFF attention signals


All attention signals can be switched off by keep pressing  button for more than 10 seconds if there is no video signal supplied.

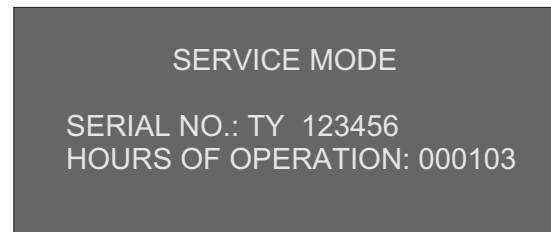


### ATTENTION




ATTENTION SIGNAL ON

### Access Service Mode

Operating monitor with no signals (power saving mode), keep pressing  button for more than 10 seconds. Following information will appear on the screen. Leave service mode by either re-feed video signal or simply turn off and on the power of monitor.



### Access Factory Mode

To hold  and  buttons then power on the monitor. Press  to bring up OSD menu for confirmation as below:



### Access Aging Mode

In the factory mode, once video signal removed, a full white pattern will be display on the screen as Fig.1 in stead of power saving mode. In other words, the power saving function will be disable in the factory mode.

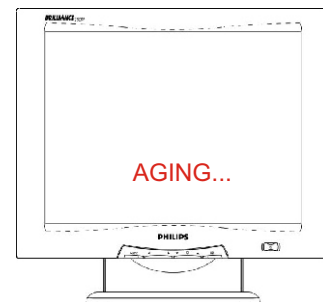


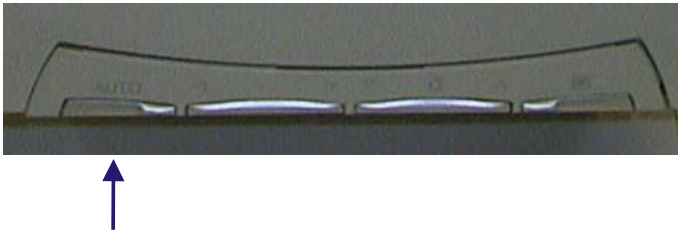
Fig.1

Leave factory mode by simply power off the monitor.

Due to the different quality of video signal generated from graphics cards. It is necessary to adjust CLOCK and PHASE functions for the optimal video display of LCD monitor. Following steps will guide you to make correct adjustment of CLOCK and PHASE.

However, CLOCK and PHASE functions are only available while analog video signal is supplied. Operating unit under digital signal state, the video clock information can be obtained from graphics cards directly. Therefore, it is unnecessary to adjust these functions

## Auto adjustment hotkey



The 150P has build-in a auto adjustment hotkey on the front panel, you may obtained a optimal video display by simply press the **AUTO** button and save the settings. CLOCK, PHASE, Vertical position, and Horizontal position are adjusted automatically.

## Manual adjustment

If the quality of display still poor or flicker, you may also improve it by manual adjust CLOCK and PHASE functions to eliminate the flicker.

Step 1 : Click on the Start button (Win95, Win98 or Win NT) and choose " Shut Down..." as shown in Fig.1

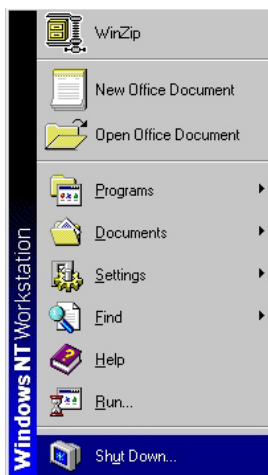


Fig.1

Step 2 : The menu of " Shut Down Windows " is as shown in Fig. 2



Fig. 2

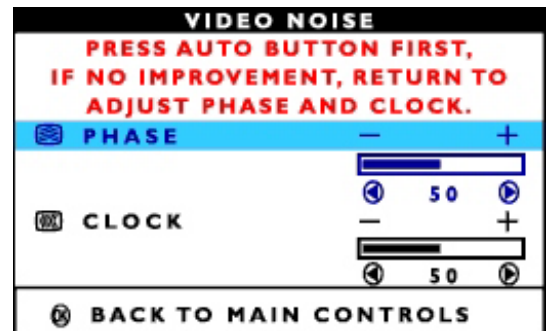
Step 3 : Remaining Shut Down Window on the screen , follow The CLOCK and PHASE adjustment instructions for the optimal video display.

Step 4 : Press the **OK** button to bring up OSD menu.

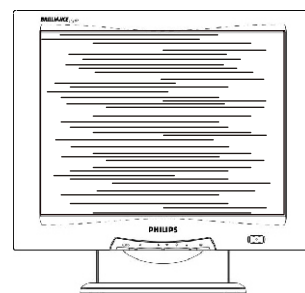


Step 5 : Select VIDEO NOISE by press **OK** button.

Step 6 : Press **DOWN** for bring up it's submenu.

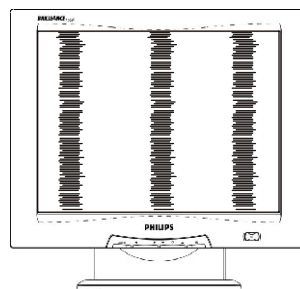


Step 7 : Press **LEFT** or **RIGHT** to adjust PHASE. The picture will be jitter as following figure, adjust PHASE and check the picture, stop at the point that without any vertical jitter bar remaining on the screen.



PHASE phenomenon

Step 8 : Press **LEFT** or **RIGHT** to adjust CLOCK. The picture will be jitter as following figure, adjust CLOCK to fine-tune the video until optimal display is obtained.



CLOCK Phenomenon

Step 9 : Quit OSD menu by press **OK** button to save the settings.



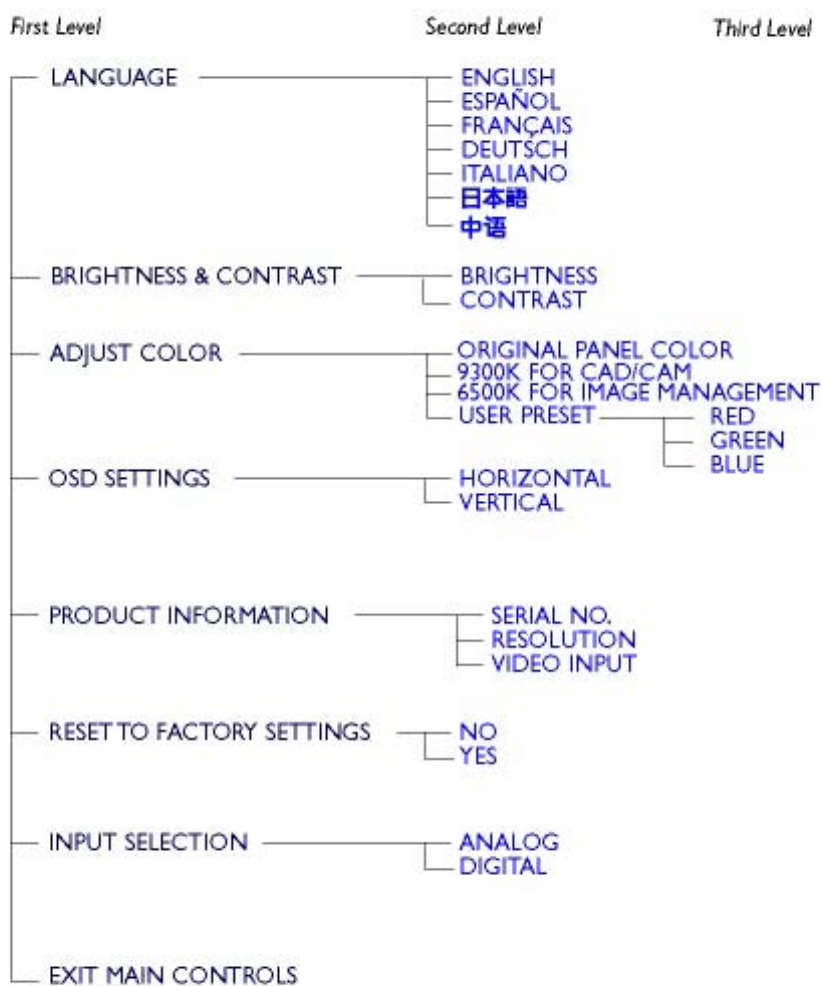
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## The OSD Tree for analog video signal

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.

### First Level

### Second Level



OSD Menu (Analog)

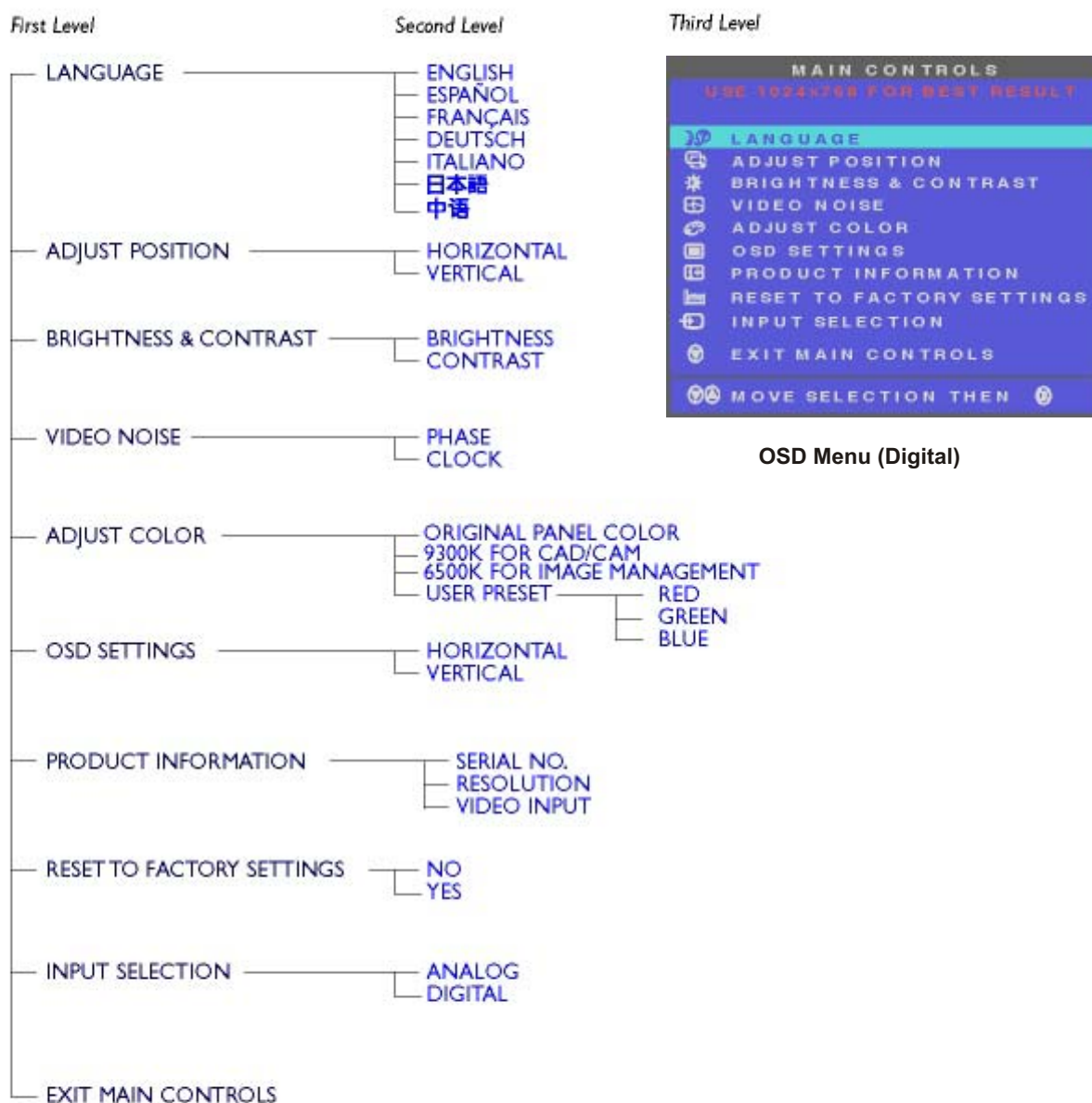
\* Specifications are subject to change without prior notice.

## The OSD Tree for digital video signal (DVI-D or DVI-I)

This OSD structure is different from analog menu, there are three functions will be disable on digital OSD menu: Contrast, Video Noise, and Adjust Color.

### First Level

### Second Level



\* Specifications are subject to change without prior notice.

## OSD Attention signals

◀◀ Go to cover page

The monitor will detect various display situation automatically. When the monitor detects the problems, the screen will show the different warning signals to remind you what is happen to your monitor.

### NO VIDEO INPUT

This screen appears if there is no video signal input. Please check that the signal cable is properly connected to the video card of PC and make sure PC is on.



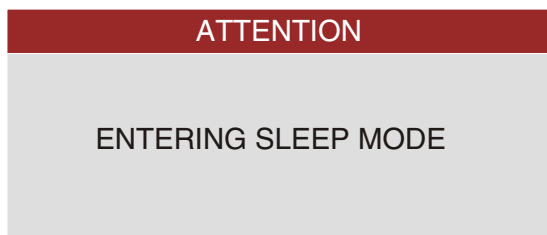
### CANNOT DISPLAY THIS VIDEO MODE..

This screen warns when the input frequency from the computer is not a standard video mode or out of the monitor's scanning range. Please change the display mode of the operating software in the computer(i.e. Windows) to 1024 x 768 @ 60Hz for best display results.



### ENTERING SLEEP MODE

This screen appears when the monitor is about to enter the sleep mode. Please press any key on the keyboard or click the mouse to wake up the monitor and computer.




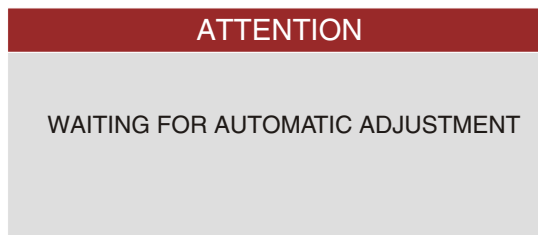
### USE 1024 X 768 FOR BEST RESULT

This message appears at the top of the OSD window when the video mode input is not the recommended 1024x768. Other modes may result in some picture distortion. Please adjust the video mode to 1024x768 at 60Hz for best display quality.

USE 1024x768 FOR BEST RESULT

### WAIT FOR AUTOMATIC ADJUSTMENT

This screen appears when you touch the  button. It will disappear when the monitor is properly adjusted.



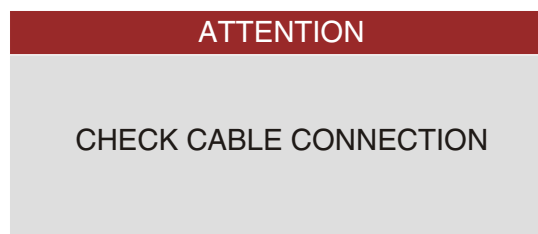
### SECOND VIDEO IS NOT AVAILABLE

When you select video input between Analog or Digital signal via INPUT SELECTION function of OSD menu, if the one you are selecting is not available, following message will appear on the screen then switching back to the previous setting automatically.



### CHECK CABLE CONNECTION

This message appears when a signal cable is disconnected while computer is working.



## TROUBLE SHOOTING

This page presents problems that can be corrected by the user. If the problem still exists after these possible solutions, a further action has to be taken by authorized technicians.

### No Picture (Power LED not lit)

- Make sure the Power cable is plugged to the wall and back of the monitor.
- Make sure the DC power cord has been attached to the DC jack.
- First, power button in front of the monitor should be in the OFF position, then press it to ON position again.

### No Picture (Power LED is Amber or Yellow in color)

- Make sure the computer is turned on.
- Make sure the signal cable is properly connected to your computer.
- Check to see if the monitor cable has bent pins.
- The Energy Saving Feature may be activated.

### Screen says

- Make sure the monitor cable is properly connected to your computer.
- Check to see if the monitor cable has bent pins.
- Make sure the computer is turned on.



### AUTO button not working properly

- The Auto Function is designed for use on standard Macintosh or IBM-compatible PC running Microsoft Windows.
- It may not work properly if using non-standard PCs or video card.

### Imaging Problems

#### Display position is incorrect

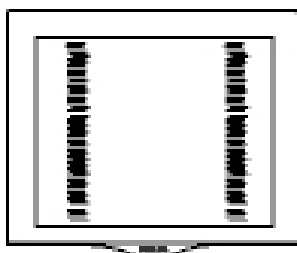
- Push the AUTO button.
- Adjust the image position using the Horizontal Position & / or Vertical Position in the Second Window.

#### Image vibrates on the screen

- Check that the signal cable is properly connected to the graphics board or PC.

#### Vertical flicker appears

- Push the AUTO button.
- Eliminate the vertical bars using the Clock Adjustment in the FIRST Window.



#### Horizontal flicker appears

- Push the Auto button.
- Eliminate the horizontal bars using the Phase Adjustment in the First Window.



#### The screen is too bright or too dark

- Adjust the contrast and brightness using the First Window.
- (The backlight of the LCD monitor has a fixed life span. When the screen becomes dark or begins to flicker, please contact your dealer.)

#### An after-image appears

- If an image remains in the screen for an extended period of time, it may be imprinted in the screen and leave an after-image. This usually disappears after a few hours.

#### An after-image remains after the power has been turned off

- This is characteristic of liquid crystal and is not caused by a malfunction or deterioration of the liquid crystal. The after-image will disappear after a set amount of time.

#### Green, red, blue, dark and white dots remain on the screen

- The remaining dots are normal characteristic of the liquid crystal used in today's technology.

# Failure Mode of LCD panel

◀◀ Go to cover page

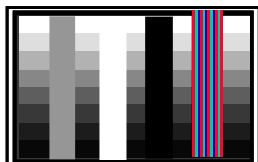
## Quick reference for failure mode of LCD panel

This page presents problems that could be made by LCD panel. It is not necessary to repair circuit board. Simply follow the Mechanical instruction on this manual to eliminate failure by replace LCD panel or backlight tubes.

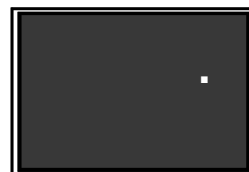
### Failure description

### Phenomenon

#### Vertical block defect



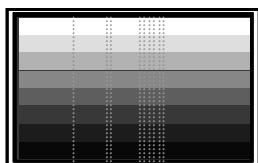
Polarizer has bubbles



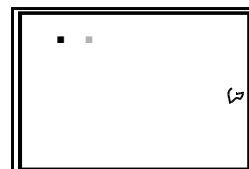
Polarizer has bubbles



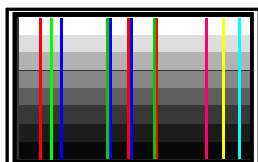
#### Vertical dim lines



Foreign material inside polarizer. It shows linear or dot shape.



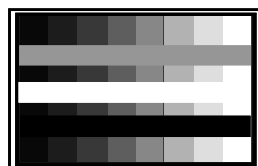
#### Vertical lines defect (Always bright or dark)



Concentric circle formed



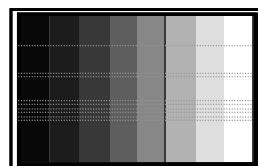
#### Horizontal block defect



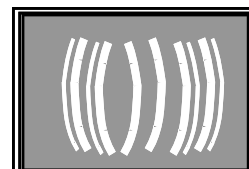
Bottom back light of LCD is brighter than normal



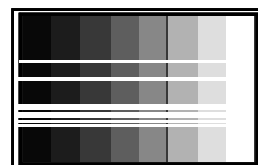
#### Horizontal dim lines



Backlight un-uniformity



#### Horizontal lines defect (Always bright or dark)



Backlight has foreign material. Black or white color, linear or circular type



#### Has bright or dark pixel





## Fpadjust program

The Flat Panel Adjust (FPadjust) software helps you to find the best setting for your Philips LCD monitor. It allows you to adjust the image performance of LCD monitor, such as RESOLUTION, AUTO ADJUSTMENT, POSITION, CONTRAST, VIDEO CLOCK and VIDEO PHASE.

Note: Video clock and phase functions are only available for analog video signals.

## Install and Run FPadjust

In "MS Windows 95/98" environment : For example

1. Insert CD-DFU(3138 117 03111) to your CD-ROM driver.
2. Run "F:\PC\FPADJUST\FP\_SETUP01.EXE" as Fig. 1.

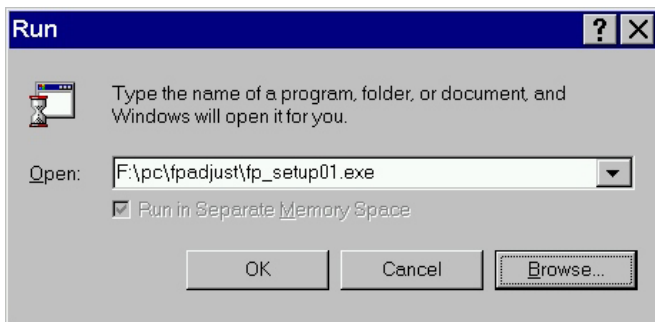

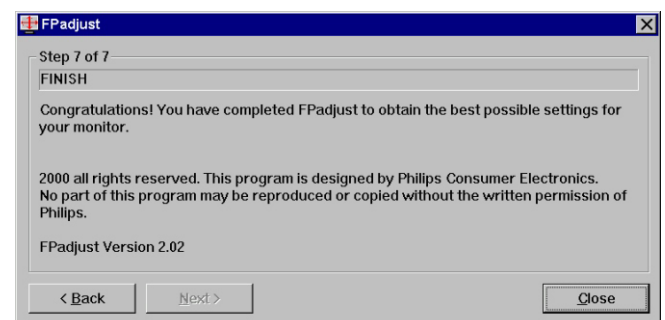
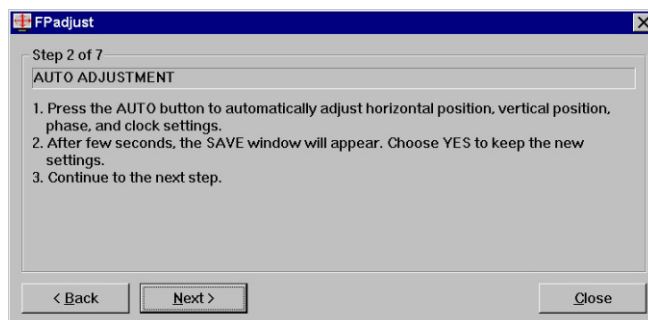
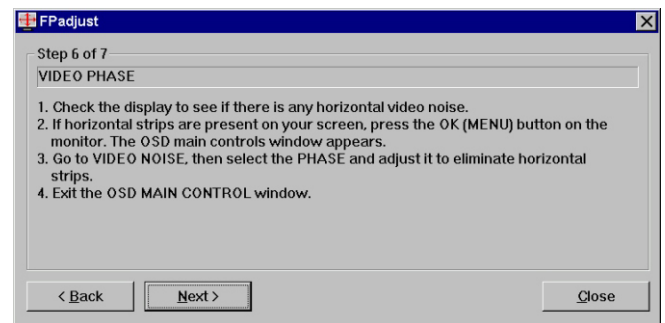
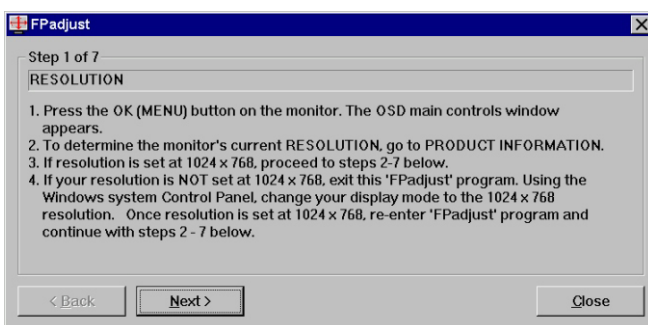
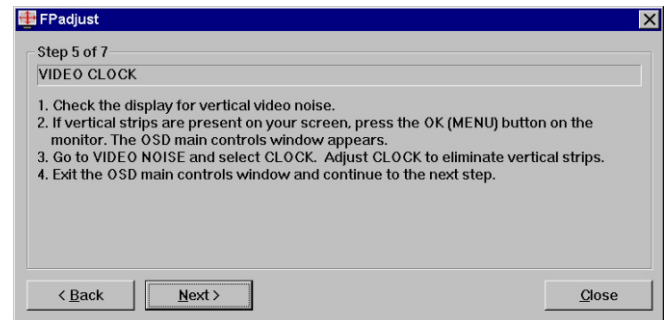
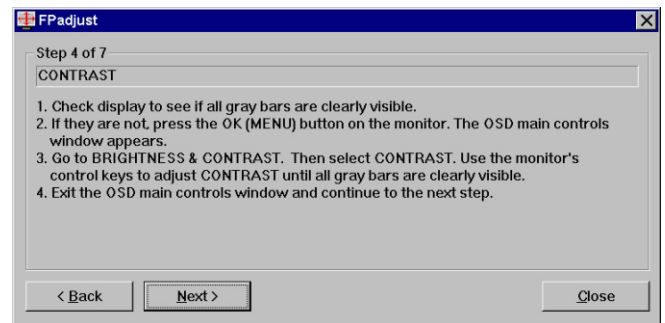
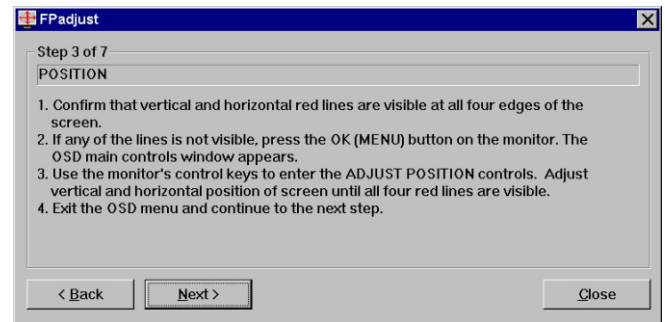


Fig. 1

3. Then follow the instructions to install the FPadjust program.

When finish, double click FPadjust icon " , then the description (can be moved by mouse) and background pattern come on the screen for image adjustment.

FPadjust program is working as a pattern generator to provide the pattern display on the screen for the adjustment of CONTRAST, CLOCK, PHASE ...etc. Please follow the steps below to adjust your PHILIPS Flat Panel Monitor for best display quality.



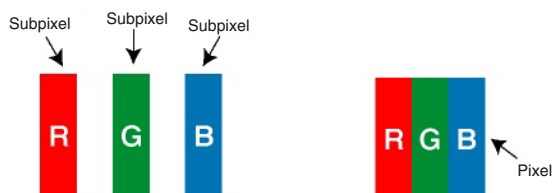
# Definition of Pixel Defects

## 0. General

This section explains the different types of pixel defects and defines acceptable defect levels of each type. In order to qualify for repair or replacement under warranty, the number of pixel defects on a TFT LCD panel must exceed these acceptable levels.

## 1. Definition of Pixels and Subpixels

A pixel, or picture element, is composed of three subpixels in the primary colors of red, green and blue. Many pixels together form an image. When all subpixels of a pixel are lit, the three colored subpixels together appear as a single white pixel. When all are dark, the three colored subpixels together appear as a single black pixel. Other combinations of lit and dark subpixels appear as single pixels of other colors.



## 2. Types of Pixel Defects

Pixel and subpixel defects appear on the screen in different ways.

### Bright dot defects

Bright dot defects appear as pixels or subpixels that are always lit or "On". These are the types of bright dot defects:

One lit red, green or blue subpixel



Two adjacent lit subpixels:

- Red + Blue = Purple
- Red + Green = Yellow
- Green + Blue = Cyan (Light Blue)



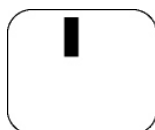
Three adjacent lit subpixels  
(One white pixel)



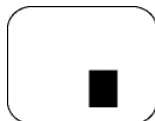
### Black dot defects

Black dot defects appear as pixels or subpixels that are always dark or "Off". These are the types of black dot defects:

One dark subpixel



Two or three adjacent dark subpixels



## 3. Pixel Defect Tolerances

In order to qualify for repair or replacement due to pixel defects during the warranty period, a TFT LCD panel in a PHILIPS flat panel monitor must have pixel or subpixel defects exceeding the tolerances listed in the following tables.

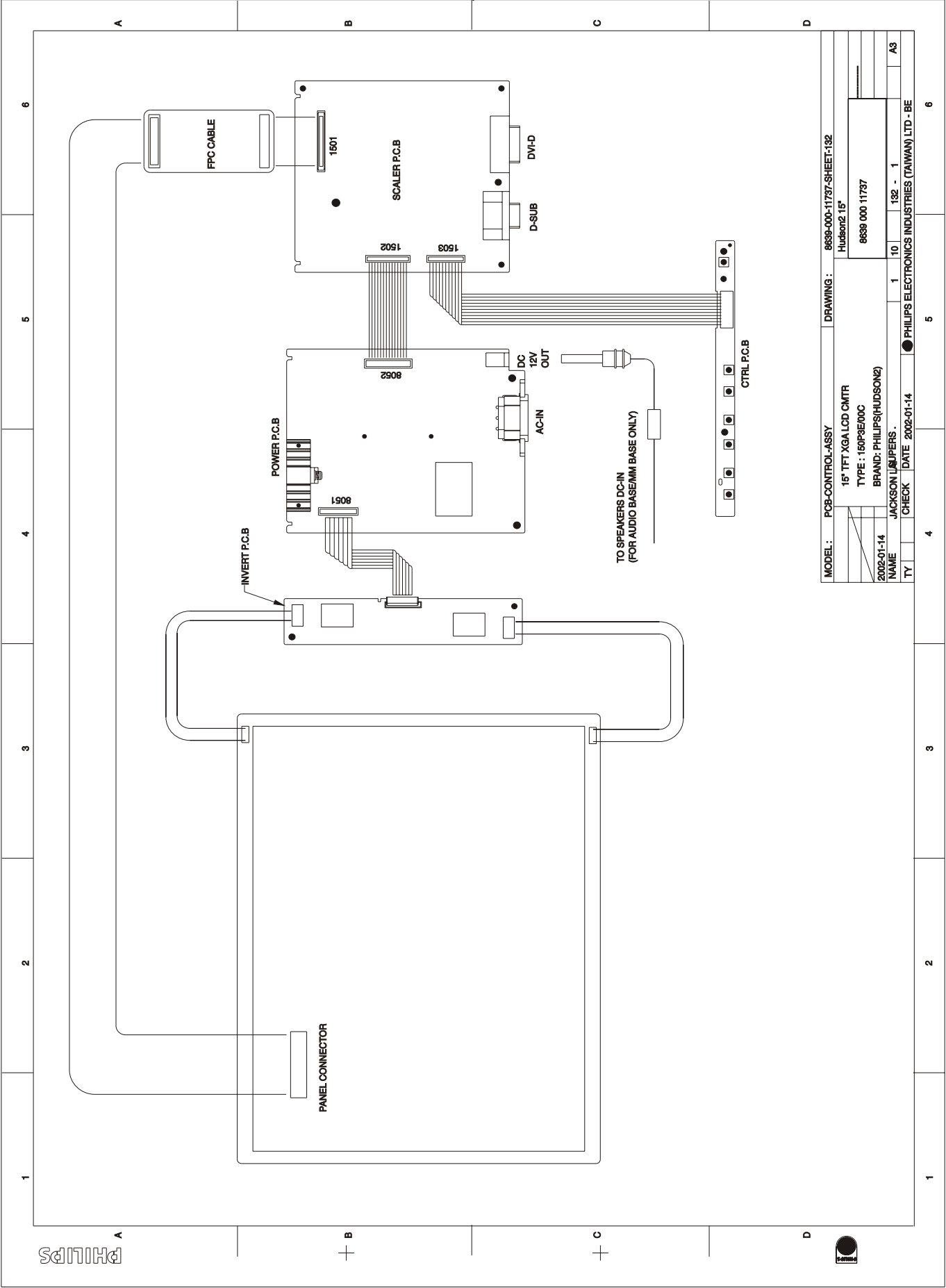
BRIGHT DOT DEFECTS	ACCEPTABLE LEVEL		
	150P3	150B3	150S3
MODEL			
1 lit subpixel	None	None	8 or fewer
2 adjacent lit subpixels	None	None	3 or fewer
3 adjacent lit subpixels (one white pixel)	None	None	1 or fewer
Distance between two bright dot defects*	None	None	15 mm or more
Bright dot defects within 20 mm circle	None	None	3 or fewer
Total bright dot defects of all types	None	None	8 or fewer

BLACK DOT DEFECTS	ACCEPTABLE LEVEL		
	150P3	150B3	150S3
MODEL			
1 dark subpixel	4 or fewer	4 or fewer	8 or fewer
2 adjacent dark subpixels	1 or fewer	1 or fewer	3 or fewer
3 adjacent dark subpixels	None	None	1 or fewer
Distance between two black dot defects*	15 mm or more	15 mm or more	15 mm or more
Black dot defects within 20 mm circle*	3 or fewer	3 or fewer	3 or fewer
Total black dot defects of all types	4 or fewer	4 or fewer	8 or fewer

TOTAL DOT DEFECTS	ACCEPTABLE LEVEL		
	150P3	150B3	150S3
MODEL			
Total bright or black dot defects of all types	4 or fewer	4 or fewer	10 or fewer

Note: 1 or 2 adjacent subpixel defects = 1 dot defect

Wiring Diagram



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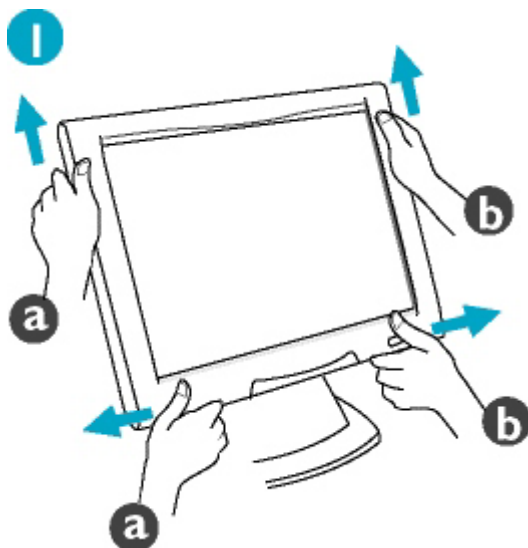
### General

To be able to perform measurements and repairs on the circuit boards, spread a soft mat underneath to avoid damaging the LCD surface.

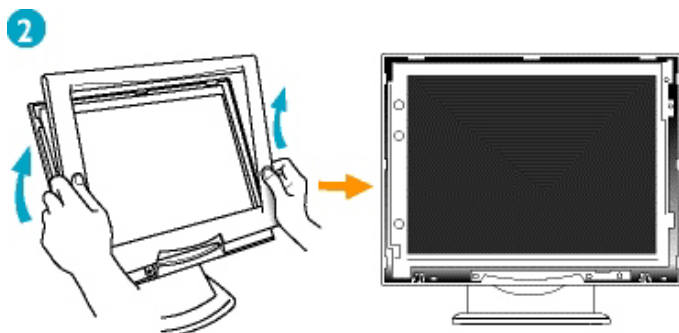
1) To remove the bezel,

(a) Push the button located underneath the monitor and slide the bezel up at the same time.

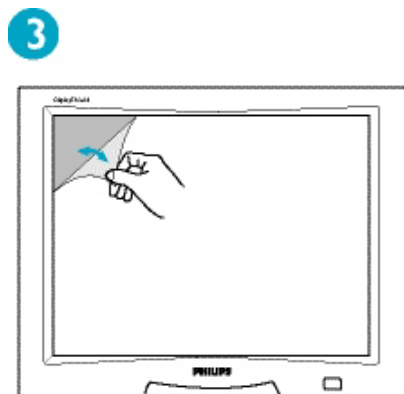
(b) Repeat step (a) for the other side.



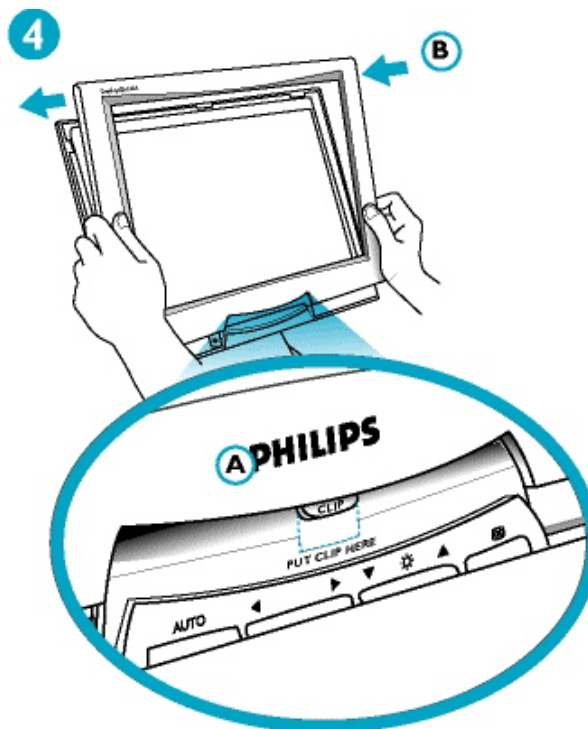
2) Pull forward to remove the front bezel from the monitor.



3) Peel off the film from both sides of the protective cover.



4) Mount the protective cover by first aligning its clip onto the guide line on above of the control panel (A), then press on (B).



5) Push down the protective cover to mount it securely



## 1. Front bezel removal

Hold lock bezel-right and lock bezel-left, then push the front Bezel from down to up see, Fig. 1



Fig. 1  
Front bezel

## 2. Control panel removal, Fig. 2

Step 1. Remove the 7 pins connectors (1712)  
Step 2. Release two screws



Fig. 2 connector (1712)

## 3. Back cover removal

Step 1. Release four screws see, Fig. 3



Fig. 3

Step 2. Pull out LG-frame panel then rotate LG-frame to find out Scaler board, power board and interver board, Fig. 4



Fig. 4

Step 3 : Removal Scaler/ powerboard  
Remove 4 screws, Fig. 5



Fig. 5

CCFT upper  
9965 000 12837

CCFT lower  
9965 000 12838

Polarizer upper  
9965 000 12835

Polarizer lower  
9965 000 12836



Fig. 6



Mechanical instructions

Source PCB Cover Stick

Gate, PCB Cover Stick

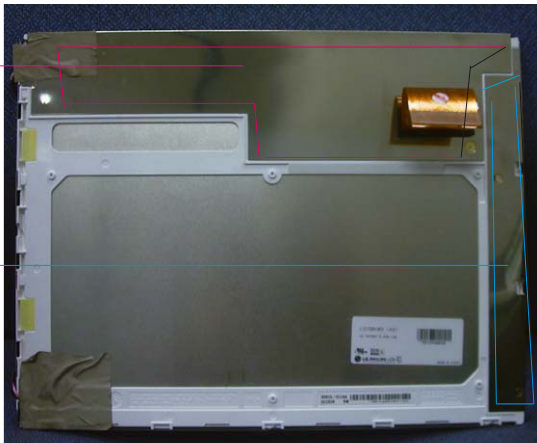


Fig. 7



Fig. 8

Tab/IC Source driver  
9965 000 12833

Source driver PCB  
Assy  
9965 000 12839



Tab/IC Gate driver  
9965 000 12834

Gate driver PCB Assy  
9965 000 12832

Fig. 9

## 0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI VGA 1024 V6-1.04/PH BETA4 interface card
- PGA 1024 (4822 212 30916), Mach 8.
- PGA 1280 (4822 212 30917), Mach 32.
- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 107kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727  
19896 (ATI1024), or 4822 727 20273 (PGA1280), or 4822 727 21046 (GPT-1600).

### 0.1 With normal VGA card:

If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

### 0.2 AC/DC Measurement:

The measurements for AC waveform and DC figure is based on 1024 x 768 48kHz/60 Hz resolution mode with test pattern "32 gray scale".

Power input: 110V AC

## 1. General points

- 1.1 During the test and measuring, supply a distortion free AC mains voltage to the apparatus via an isolated transformer with low internal resistance.
- 1.2 All measurements mentioned hereafter are carried out at a normal mains voltage (90 - 132 VAC for USA version, 195 - 264 VAC for EUROPEAN version, or 90 - 264 VAC for the model with full range power supply, unless otherwise stated.)
- 1.3 All voltages are to be measurement or applied with respect to ground, unless otherwise stated. Note: don't use heat-sink as ground.
- 1.4 The test has to be done on a complete set including LCD panel in a room with temperature of 25 +/- 5 degree C.
- 1.5 All values mentioned in these test instruction are only applicable of a well aligned apparatus, with correct signal.
- 1.6 The letters symbols (B) and (S) placed behind the test instruction denotes  
(B): carried out 100% inspection at assembly line  
(S): carried out test by sampling
- 1.7 The white balance (color temperature), has to be tested in subdued lighted room.
- 1.8 Repetitive power on/off cycle are allowed except it should be avoided within 6 sec.

## 2. Input signal

### 2.1 Signal type

Video : 0.7 Vp-p linear, positive polarity  
Sync. : TTL level, separate, positive or negative polarity  
Signal source: pattern generator format as attachment.  
(table 1 to 14) Reference generator: CHROMA 2200 or 2250

### 2.2 Input signal mode

Pre-set 14 modes

## Factory preset video resolution

Dot rate (MHz)	H.freq (KHz)	Mode	Resolution	V.freq (Hz)
25.175	31.469	IBM VGA 10h	640 * 350	70.087
28.322	31.469	IBM VGA 3h	720 * 400	70.087
25.175	31.469	IBM VGA 12h	640 * 480	59.940
30.240	35.000	MACINTOSH	640 * 480	66.667
31.500	37.861	VESA	640 * 480	72.809
31.500	37.500	VESA	640 * 480	75.000
36.000	35.156	VESA	800 * 600	56.250
40.000	37.879	VESA	800 * 600	60.317
50.000	48.077	VESA	800 * 600	72.188
49.500	46.875	VESA	800 * 600	75.000
57.300	49.700	MACINTOSH	832 * 624	75.000
65.000	48.363	VESA	1024 * 768	60.004
75.000	56.476	VESA	1024 * 768	70.069
78.750	60.023	VESA	1024 * 768	75.029

## 3. AC Adaptor

- 3.1 Setup the AC I/P at 90VAC, and Output DC loading at 3.8 Amp, The DC output voltage is 12 0.5 VDC

### 3.2 Adjustment is nothing to do

## 4. Display Adjustment

### 4.1 Input signals check

In factory mode, use 64 gray level and set the R,G,B sub gain to 100%.

### 4.2 Display quality test

Use timing mode as described in 2.2, 2.3, 2.4, and use the POPO (pixel on pixel off) pattern to adjust the clock until no stripe and adjust the phase until clear picture. Check all pre-setting 14 modes.

### 4.3 Check of WHITE-D (B)

Apply a 48kHz/60Hz signal with white pattern, set brightness control at 100%, and contrast control at 50%. Adjust the R, G, B sub\_gain, for the screen center, the 1931 CIE chromaticity (X, Y) co-ordinates shall be;

	9300 K	6500 K
x (center)	0.281 0.005	0.312 0.005
y (center)	0.311 0.005	0.338 0.005

Use Minolta CA-110 for color coordinates and luminance check. Luminance; 250 Nits (LG panel) in the center of the screen.

### 4.4 Check the digital interface

Set the delay time to be 6 nsec.  
Check the 64 gray level color poor & noise condition.

# Factory Adjustment

◀◀ Go to cover page

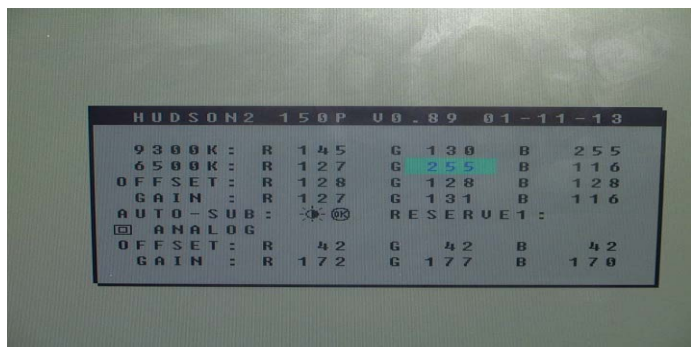
## Factory Mode Adjustment

Entering Factory Adjustment Menu

Push **OK** & **AUTO** buttons then power on the monitor, release them after picture display normally. Press **OK** button to bring up OSD menu of factory mode as shown below.



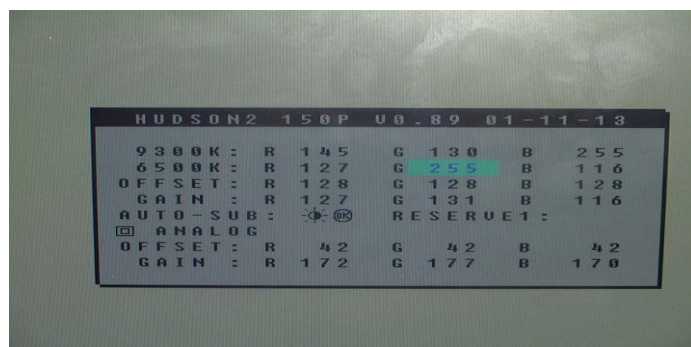
Use **↓** button to select factory adjustment indication (for example: , HUDSON 150P V1.56D 01-03-09 which is the entrance of the factory adjustment menu, press **OK** button to access it. The window shows as below.



Use **▲** or **▼** buttons to select SUB-CON, 9300K R G B,..etc.

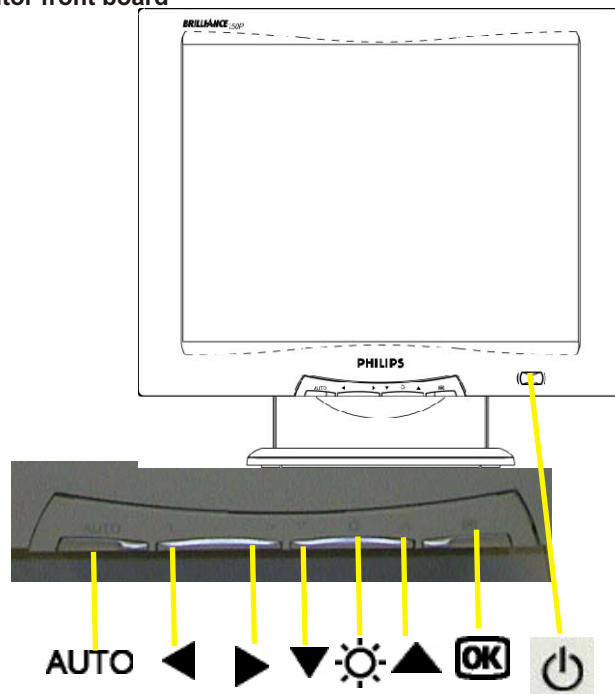
Use **◀** or **▶** buttons to decrease/increase the value of each item

**AUTO** : adjust Sub-brightness & Sub-contrast automatically.



(PS: The Offset R G B function can be used on reduce or eliminate snowy noise on the background when the resolution of video signal is 1024 X 768 vertical 60Hz. Slightly increase or decrease the value until snowy noise completely disappear.)

## Monitor front board



Contrast adjustment (Sub-Contrast). Use this menu item to adjust the contrast gain of pre-amp ranges from 0 to 255.

9300K R G B

6500K R G B

Color temperature gain adjustment. Use these menu items to adjust the RGB gains of pre-amp for different color temperatures, ranges from 0 to 255.

OFFSET R G B

Sub-Brightness adjustment. Use this menu item to adjust the brightness level (DC-level) of pre-amp range from 0 to 255.

All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both *Hipot* and *Ground Continuity* testing.

## HI-POT TEST INSTRUCTION

### 1. Application requirements

- 1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.
- 1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

### 2. Test method

#### 2.1 Connecting conditions

- 2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.
- 2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.
- 2.1.3 The mains switch(es) must be in the "ON" position.

#### 2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: $\leq 0.09 + R$ ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time (Tester)	set at 2 seconds		

- 2.2.1 The test with AC voltage is only for production purpose, **Service center shall use DC voltage.**
- 2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute. No breakdown during the test.
- 2.2.3 The test voltage must be maintained within the specified voltage + 5%.
- 2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

### 3. Equipments and Connection

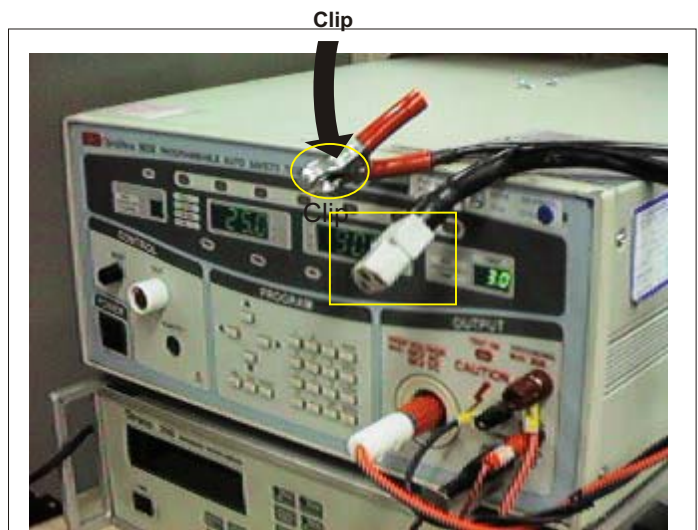
#### 3.1. Equipments

For example :

- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

#### 3.2. Connection

- \* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



(ChenHwa 9032 tester)

Video cable



Grounding screw



### 4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.



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## General

### DDC Data Re-programming

In case the DDC data memory IC or main EEPROM which storage all factory settings were replaced due to a defect, the serial numbers have to be re-programmed.

It is advised to re-soldered DDC IC and main EEPROM from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

### Additional information

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

### DDC EDID structure

For Analog interface: Standard Version 3.0

Structure Version 1.2

For Digital interface: Standard Version 3.0

Structure Version 1.3

## System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98.
3. EDID301.EXE program (3138 106 10103) as shown in Fig. 1
4. A/D Alignment kits (3138 106 10079):  
inclusion : a. Alignment box x1 (as Fig. 2)

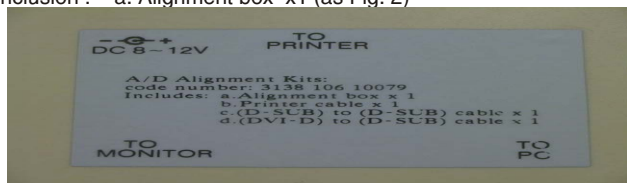


Fig. 2

- b. Printer cable x1  
c. (D-Sub) to (D-Sub) cable x1  
d. (DVI-D) to (D-Sub) cable x1 (as Fig. 3)

Note: The EDID301.EXE (Release Version 1.58 20000818) is a windows-based program, which cannot be run in MS-DOS.

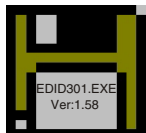


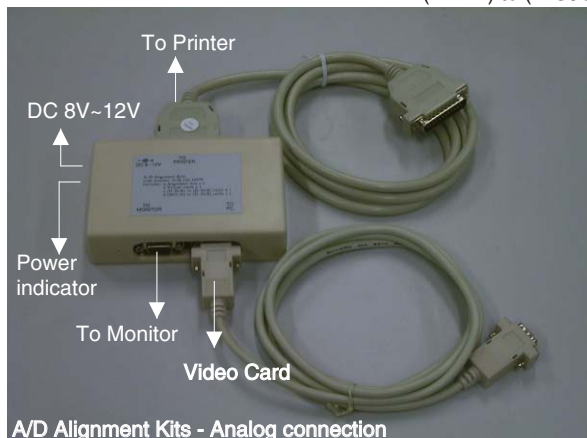
Fig. 1

Diskette with EDID301.EXE



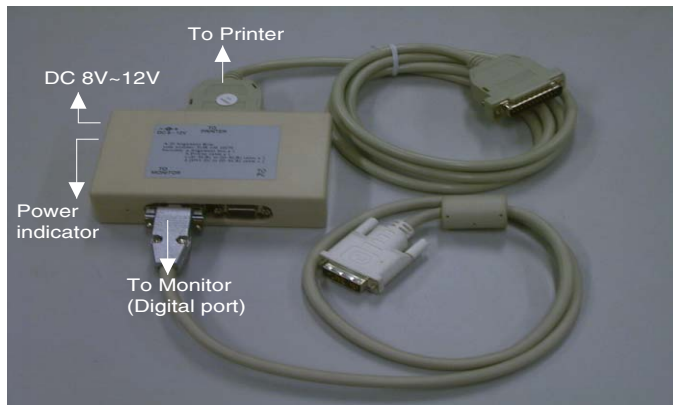
Fig. 3

(DVI-D) to (D-Sub) cable



A/D Alignment Kits - Analog connection

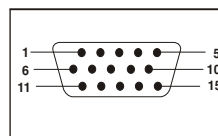
Note: The alignment box has already build-in a batteries socket for using batteries (9V) as power source. Pull out the socket by remove four screws at the rear of box. Please do not forget that remove batteries after programming. The energy of batteries can only drive circuits for a short period of time.



A/D Alignment Kits - Digital connection

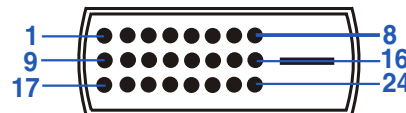
### Pin assignment

#### A. 15-pin D-Sub Connector



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	+5V
2	Green video input	10	Ground
3	Blue video input	11	Ground
4	Ground	12	Serial data line(SDA)
5	No Connected	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

#### B. DVI-D Connector



Pin No.	Assignment	Pin No.	Assignment
1	TMDS Data 2-	13	TMDS Data 3+
2	TMDS Data 2+	14	+5V Power
3	TMDS Data 2/4 Shield	15	Ground (+5V)
4	TMDS Data 4-	16	Hot Plug Detect
5	TMDS Data 4+	17	TMDS Data 0-
6	DDC Clock	18	TMDS Data 0+
7	DDC Data	19	TMDS Data 0/5 Shield
8	No connect	20	TMDS Data 5-
9	TMDS Data 1-	21	TMDS Data 5+
10	TMDS Data 1+	22	TMDS Clock Shield
11	TMDS Data 1/3 Shield	23	TMDS Clock+
12	TMDS Data 3-	24	TMDS Clock-

## Configuration and procedure

There are threeips contained serial number on the circuit board, Analog DDC IC (7202), Digital DDC IC (7201) and main EEPROM (7362) which storage all factory settings. Following descriptions are the connection and procedure for Analog DDC IC and Digital DDC IC, the main EEPROM can be re-programmed along with Analog IC by enable factory memory data write function on the DDC program (EDID301.EXE).

### Initialize alignment box

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before running programming software (EDID301.EXE). Following steps show you the procedures and connection.



- Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
- Step 2: Connecting printer cable and video cable of monitor as Fig. 4
- Step 3: Run the EDID301.EXE program until the main menu appears. This is for initialize alignment box.

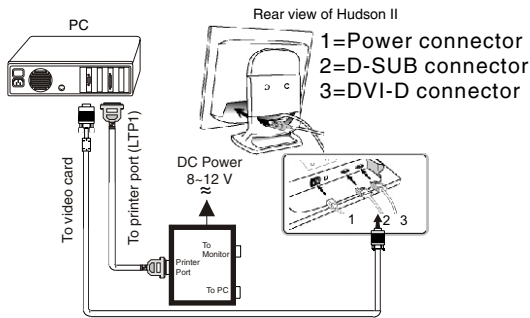


Fig. 4

Note: DVI-Dto D-Sub adapter can be removed if graphic card of PC with a DVI-D interface connector.

### Re-programming DDC IC

- Step 1: After initialize alignment box, connecting all cables and box as Fig. 5
- Step 2: Follow the steps on DDC re-programming instructions to starting re-programming.

### Re-programming Analog

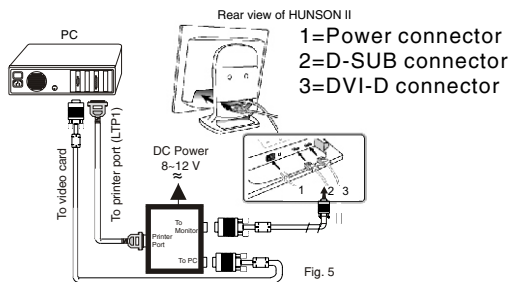


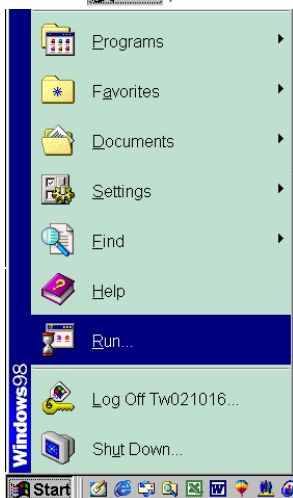
Fig. 5

### DDC re-initializing instructions

#### Start on DDC program

Start Microsoft Windows.

1. Insert the disk containing EDID301.EXE program into floppy disk drive.
2. Click **Start**, choose Run at start menu of Windows 95/98.



3. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301.exe,) as shown in Fig. 6.

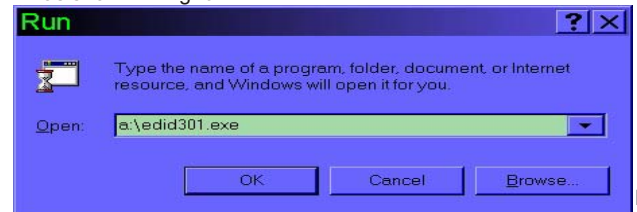


Fig. 6

4. Click **OK** button. The main menu appears (as shown on Fig. 7).

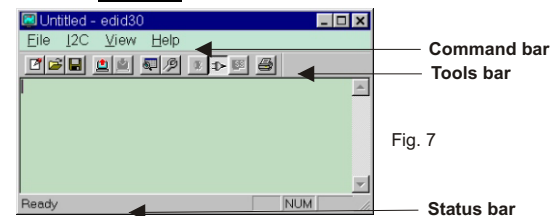



Fig. 7

Note:

If the connection is improper, you will see the following error message before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the



#### Loading DDC data from monitor

1. Click  icon on the tools bar to bring up the Configuration Setup windows as Fig.8
2. Select the DDC2B as the communication channel.
3. Enable Factory memory data write function and fill in page address F0 to the block.
4. Disable Software DDC function.
5. Click **OK** button to confirm your selection.

Note: The Factory memory data write function will allow EDID301 to rewrite serial numbers both Analog DDC IC and main EEPROM to make sure both S/N are exactly the same. You may confirm the function by checking the S/N at Product information of the OSD menu after restarting the monitor.

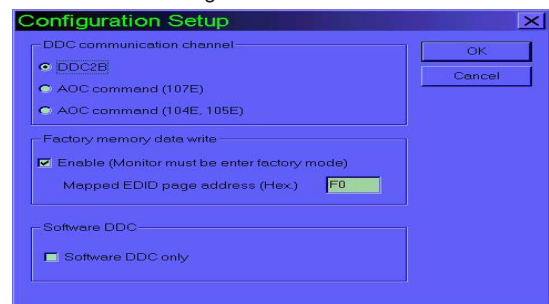

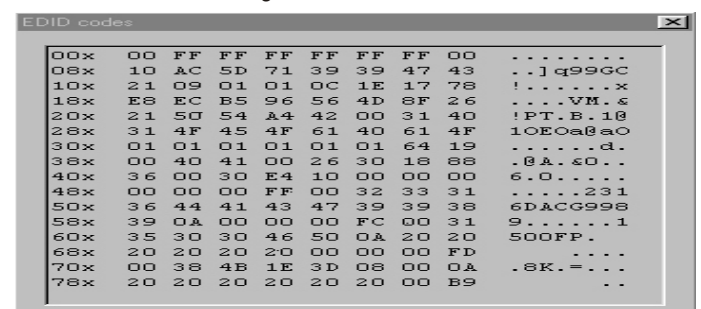


Fig. 8

6. Click  icon to read DDC EDID data from monitor. The EDID codes will display on screen as following. (The EDID codes are depend on the model.) Meanwhile, The status bar will indicate 00% to 100% when reading.



# DDC Instructions

◀◀ Go to cover page

Note:

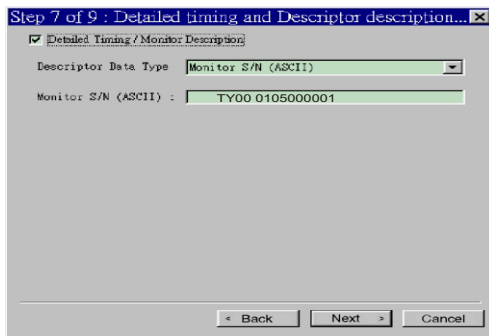
During the loading, EDID301 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen, as below. Please confirm following steps to avoid this message.

1. The data structure of EDID was incorrect.
2. DDC IC that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup Windows.
4. Cables loosed or poor contact of connection.



## Modify DDC data (Serial No.)

1. Click icon on the tool bar.
2. Click till the Step 7 of 9 window appears.
3. Type the new Serial No. (for example, TY00 0105000001).
4. Click till the last step window appears, then click to exit the Step window.



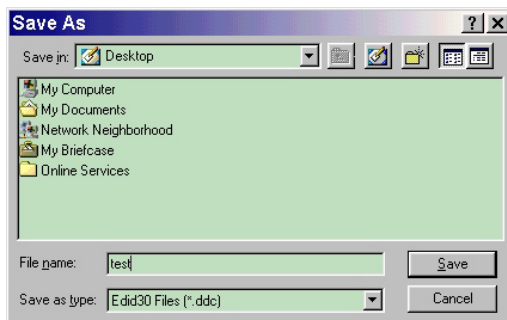
## Write DDC data to monitor

1. Click icon from the tools bar to starting rewrite DDC data.
2. Click for confirmation.

## Save DDC data as a file

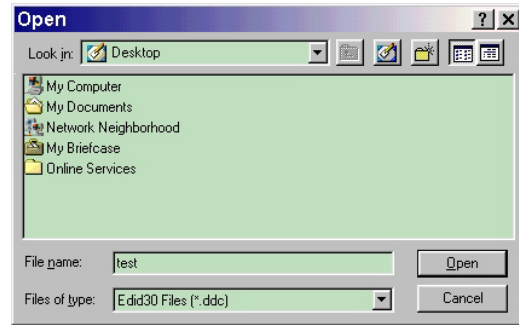
Sometimes, you maybe need to save DDC data as a text file for using on other DDC chip. To save DDC data, follow the steps below:

1. Click icon on the tools bar and type a file name you like. The file format is ddc type which can be open by Microsoft WordPad.
2. Click button.



## Load DDC data from file

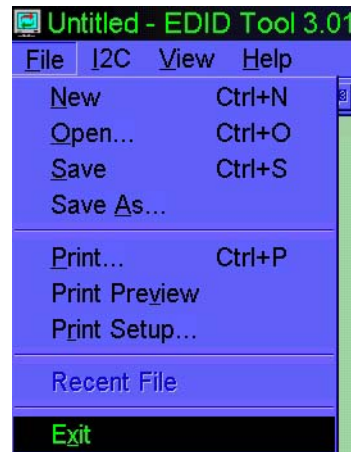
1. Click from the tools bar.
2. Select the file you want to open.
3. Click Button.



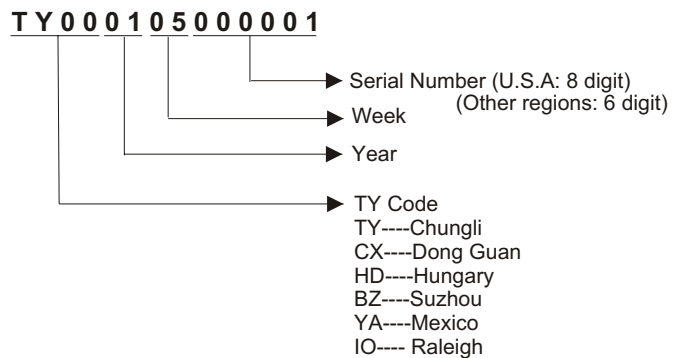
4. Now you can re-programming DDC data which you just loaded from a file, please be confirmed that model and serial number are correct and match with the monitor you are trying to re-write.

## Exit DDC program

1. Click file command on the command bar then select Exit.



## Definition of Serial Number



## Re-programming Digital DDC IC

Step 1: Connecting all cables and alignment box as shown in Fig. 9.

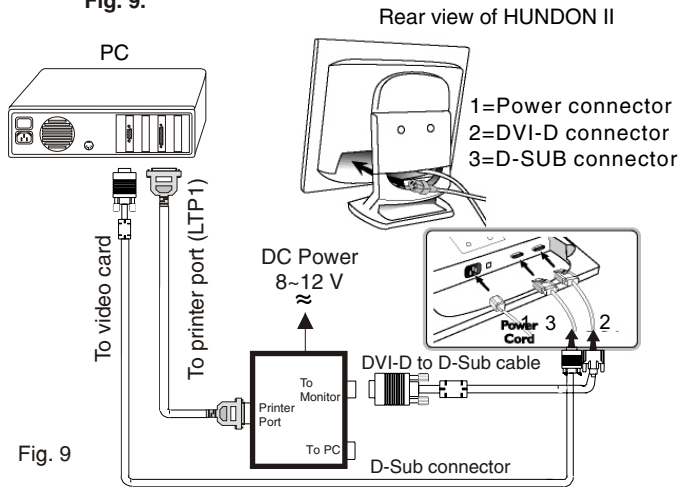


Fig. 9

After connection for Digital DDC application, if it is still in Analog DDC application of EDID301.

Exit EDID301 program before Digital DDC application.

### Step 2: Initialize alignment box

(Shortcut of EDID301.EXE on Windows Wallpaper already.)

Double click EDID301 icon (as shown in Fig. 10) which is on the screen of Windows Wallpaper.

Bring up main menu of EDID301 as shown in Fig. 11.



Fig. 10

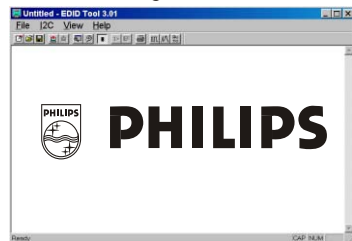
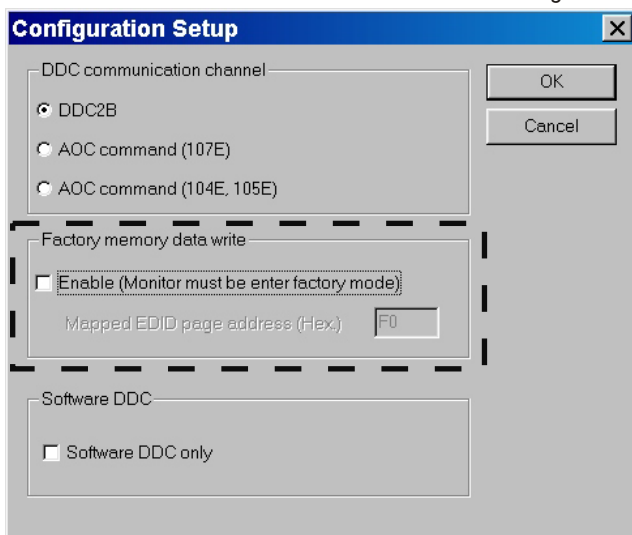


Fig. 11

### Step 3: Read DDC data from monitor

- Click icon from the tool bar to bring up the Channels Configuration Setup windows as shown in Fig. 11.
- Select the DDC2B as the communication channel.  
**Disable "Factory memory data write" for Digital DDC application** as shown in Fig. 12.
- Click OK button to confirm your selection.

Fig. 12



- Click icon (Read EDID function) to read DDC EDID data from monitor. The EDID codes will display on screen as shown in Fig. 13.

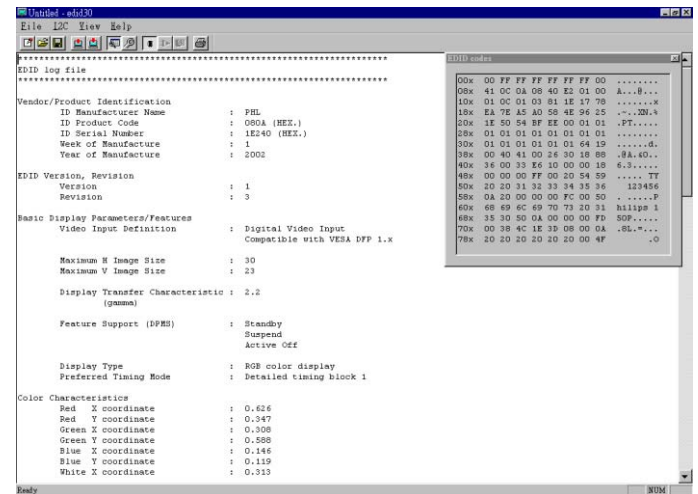


Fig. 13

### Step 4: Modify DDC data (verify EDID version, week, year)

- Click (new function) icon from the tool bar, bring up Step 1 of 9 (Digital) as shown in Fig. 14. EDID30 DDC application provides the function selection and text change (select & fill out) from Step 1 to Step 9.

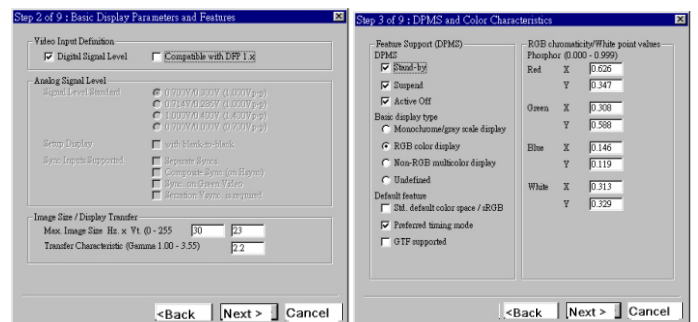
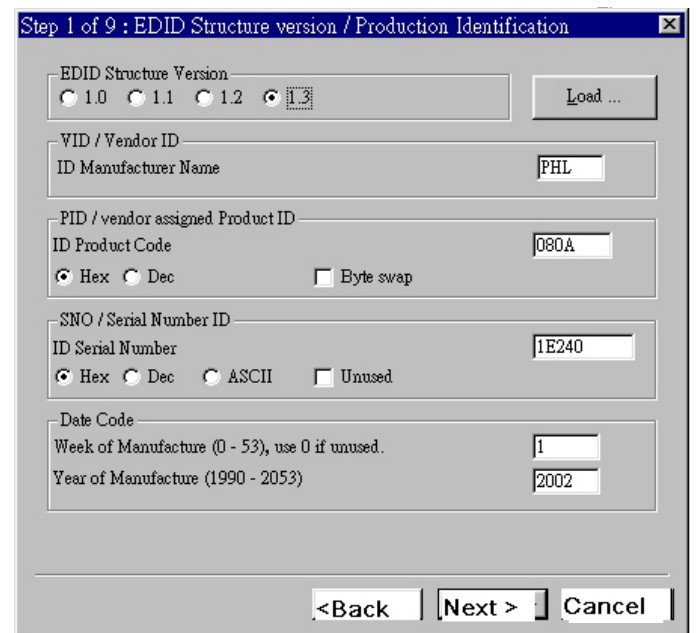


Fig. 15

Fig. 16

## DDC Instructions (Continued)

◀◀ Go to cover page

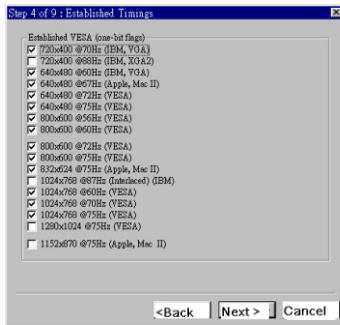


Fig. 17

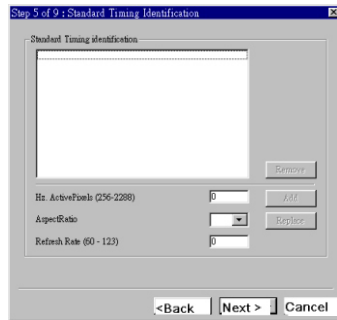


Fig. 18

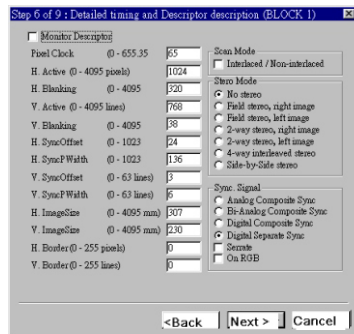


Fig. 19

## Step 5: Modify DDC data (Monitor Serial No.)

Monitor Serial No. can be filled up or be changed (for example, YEKA000700) as shown in Fig. 20.

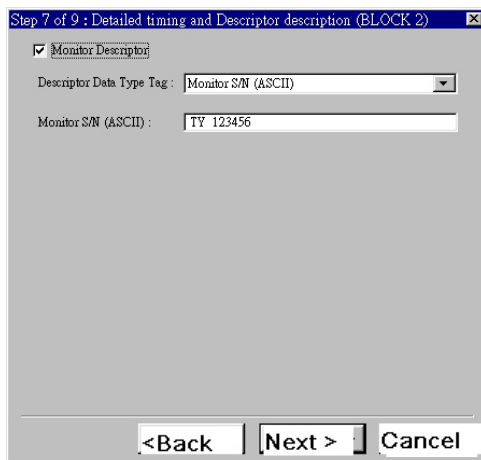


Fig. 20

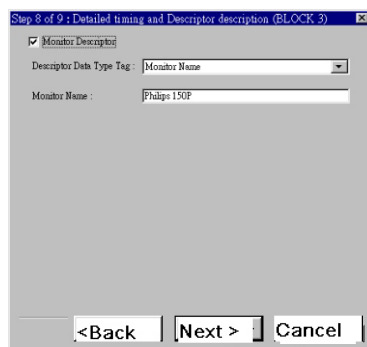


Fig. 21

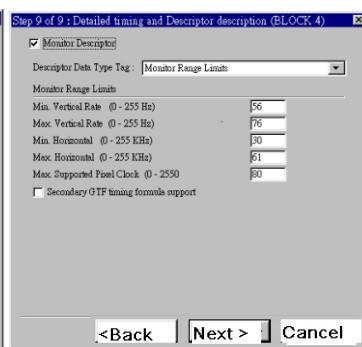


Fig. 22

## Step 6: Write DDC data

1. Click (Write EDID) icon from the tool bar to write DDC data.
2. Click (Read EDID) to confirm (check contents) it.

## Step 7: Save DDC data

Sometimes, you may need to save DDC data as a text file for using in other IC chip. To save DDC data, follow the steps below:

1. Click (Save) icon (or click "file"-> "save as") from the tool bar and give a file name as shown in Fig. 23.
2. Click **Save**.

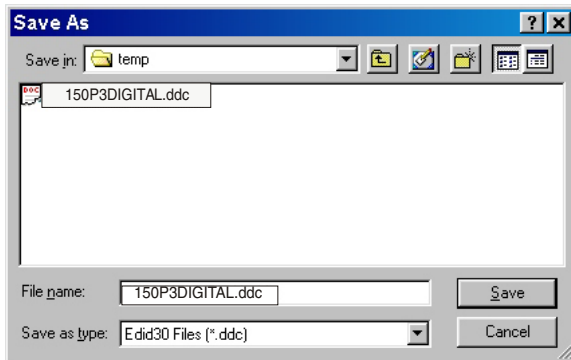


Fig. 23

## Step 8: Load DDC data

1. Click from the tool bar.
2. Select the file you want to open as shown in Fig. 24.
3. Click **Open**.

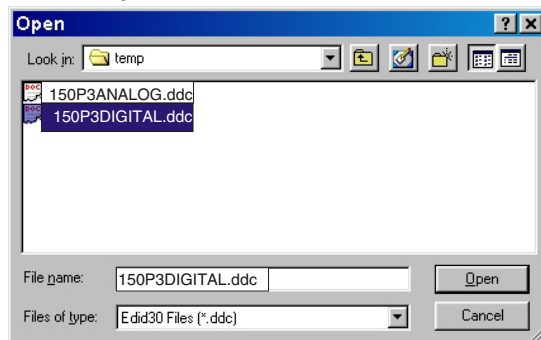


Fig. 24

## Step 9: Exit DDC program

Pull down the File menu and select Exit as shown in Fig. 25.

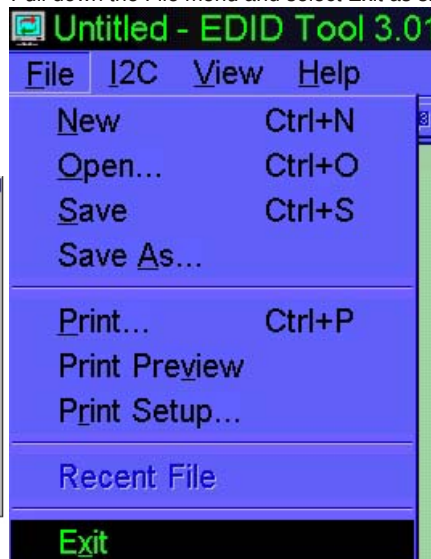


Fig. 25

Click **Finish** to exit the Step window as shown in Fig. 22.

THE DISPLAY DATA CHANNEL ( DDC ) 1/2B CONTENT INCLUDING  
(FOR CPT ANALOG)

## Vendor/Product Identification

ID Manufacturer Name : PHL  
 ID Product Code : 080A (HEX.)  
 ID Serial Number : 1E240 (DEC.)  
 Week of Manufacture : 1  
 Year of Manufacture : 2002

## EDID Version, Revision

Version : 1  
 Revision : 3

## Basic Display Parameters/Features

Video Input Definition : Analog Video Input  
 0.714V/0.286V (1.00Vpp)  
 without Blank-to-Black Setup  
 Separate Sync  
 Composite Sync  
 Sync on Green  
 no Serration required

Maximum H Image Size : 30  
 Maximum V Image Size : 23  
 Display Transfer Characteristic : 2.2  
 (gamma)

Feature Support (DPMS) : Standby  
 Suspend  
 Active Off

Display Type : RGB color display  
 Preferred Timing Mode : Detailed timing block 1

## Color Characteristics

Red X coordinate : 0.627  
 Red Y coordinate : 0.347  
 Green X coordinate : 0.308  
 Green Y coordinate : 0.556  
 Blue X coordinate : 0.148  
 Blue Y coordinate : 0.092  
 White X coordinate : 0.316  
 White Y coordinate : 0.328

## Established Timings

Established Timings I : 720 x 400 @70Hz (IBM,VGA)  
 640 x 480 @60Hz (IBM,VGA)  
 640 x 480 @67Hz (Apple,Mac II)  
 640 x 480 @72Hz (VESA)  
 640 x 480 @75Hz (VESA)  
 800 x 600 @56Hz (VESA)  
 800 x 600 @60Hz (VESA)  
 Established Timings II : 800 x 600 @72Hz (VESA)  
 800 x 600 @75Hz (VESA)  
 832 x 624 @75Hz (Apple,Mac II)  
 1024 x 768 @60Hz (VESA)  
 1024 x 768 @70Hz (VESA)  
 1024 x 768 @75Hz (VESA)

Manufacturer's timings : Unused

## Detailed Timing #1

Pixel Clock (MHz) : 65  
 H Active (pixels) : 1024  
 H Blanking (pixels) : 320  
 V Active (lines) : 768  
 V Blanking (lines) : 38  
 H Sync Offset (F Porch) (pixels): 24  
 H Sync Pulse Width (pixels) : 136  
 V Sync Offset (F Porch) (lines) : 3  
 V Sync Pulse Width (lines) : 6  
 H Image Size (mm) : 307  
 V Image Size (mm) : 230  
 H Border (pixels) : 0  
 V Border (lines) : 0  
 Flags : Non-interlaced  
 : Normal Display, No stereo  
 : Digital Separate sync.  
 : Negative Vertical Sync.  
 : Negative Horizontal Sync.

## Monitor Descriptor #2

Serial Number : TY 123456

## Monitor Descriptor #3

Monitor Name : PHILIPS 150P

## Monitor Descriptor #4

Monitor Range Limits  
 Min. Vt rate Hz : 56  
 Max. Vt rate Hz : 76  
 Min. Horiz. rate kHz : 30  
 Max. Horiz. rate kHz : 61  
 Max. Supported Pixel : 80

Extension Flag : 0

Check sum : F5 (HEX.)

## EDID data (128bytes)

\*\*\*\*\*  
 0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00  
 8: 41 9: 0c 10: 0a 11: 08 12: 40 13: e2 14: 01 15: 00  
 16: 01 17: 0c 18: 01 19: 03 20: 2e 21: 1e 22: 17 23: 78  
 24: ea 25: bd 26: 20 27: a0 28: 58 29: 4e 30: 8e 31: 26  
 32: 17 33: 51 34: 54 35: bf 36: ee 37: 00 38: 01 39: 01  
 40: 01 41: 01 42: 01 43: 01 44: 01 45: 01 46: 01 47: 01  
 48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 64 55: 19  
 56: 00 57: 40 58: 41 59: 00 60: 26 61: 30 62: 18 63: 88  
 64: 36 65: 00 66: 33 67: e6 68: 10 69: 00 70: 00 71: 18  
 72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59  
 80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36  
 88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50  
 96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 31  
 104: 35 105: 30 106: 50 107: 0a 108: 00 109: 00 110: 00 111: fd  
 112: 00 113: 38 114: 4c 115: 1e 116: 3d 117: 08 118: 00 119: 0a  
 120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: f5  
 \*\*\*\*\*



## DDC data of Digital

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THE DISPLAY DATA CHANNEL ( DDC ) 1/2B CONTENT INCLUDING  
(FOR CPT DIGITAL)

## Vendor/Product Identification

ID Manufacturer Name : PHL  
ID Product Code : 080A (HEX.)  
ID Serial Number : 1E240 (DEC.)  
Week of Manufacture : 1  
Year of Manufacture : 2002

## EDID Version, Revision

Version : 1  
Revision : 3

## Basic Display Parameters/Features

Video Input Definition : Digital Video Input  
Compatible with VESA DFP 1.X

Maximum H Image Size : 30  
Maximum V Image Size : 23  
Display Transfer Characteristic : 2.2  
(gamma)

Feature Support (DPMS) : Standby  
Suspend  
Active Off

Display Type : RGB color display  
Preferred Timing Mode : Detailed timing block 1

## Color Characteristics

Red X coordinate : 0.627  
Red Y coordinate : 0.347  
Green X coordinate : 0.308  
Green Y coordinate : 0.556  
Blue X coordinate : 0.148  
Blue Y coordinate : 0.092  
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White Y coordinate : 0.328

## Established Timings

Established Timings I : 720 x 400 @70Hz (IBM,VGA)  
640 x 480 @60Hz (IBM,VGA)  
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640 x 480 @72Hz (VESA)  
640 x 480 @75Hz (VESA)  
800 x 600 @56Hz (VESA)  
800 x 600 @60Hz (VESA)  
Established Timings II : 800 x 600 @72Hz (VESA)  
800 x 600 @75Hz (VESA)  
832 x 624 @75Hz (Apple,Mac II)  
1024 x 768 @60Hz (VESA)  
1024 x 768 @70Hz (VESA)  
1024 x 768 @75Hz (VESA)  
Manufacturer's timings : Unused

## Detailed Timing #1

Pixel Clock (MHz) : 65  
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V Blanking (lines) : 38  
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H Sync Pulse Width (pixels) : 136  
V Sync Offset (F Porch) (lines) : 3  
V Sync Pulse Width (lines) : 6  
H Image Size (mm) : 307  
V Image Size (mm) : 230  
H Border (pixels) : 0  
V Border (lines) : 0  
Flags : Non-interlaced  
: Normal Display, No stereo  
: Digital Separate sync.  
: Negative Vertical Sync.  
: Negative Horizontal Sync.

## Monitor Descriptor #2

Serial Number : TY 123456

## Monitor Descriptor #3

Monitor Name : PHILIPS 150P

## Monitor Descriptor #4

Monitor Range Limits  
Min. Vt rate Hz : 56  
Max. Vt rate Hz : 76  
Min. Horiz. rate kHz : 30  
Max. Horiz. rate kHz : 61  
Max. Supported Pixel : 80

Extension Flag : 0

Check sum : A2 (HEX.)

\*\*\*\*\*

## EDID data (128 bytes)

\*\*\*\*\*

0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00  
8: 41 9: 0c 10: 0a 11: 08 12: 40 13: e2 14: 01 15: 00  
16: 01 17: 0c 18: 01 19: 03 20: 81 21: 1e 22: 17 23: 78  
24: ea 25: bd 26: 20 27: a0 28: 58 29: 4e 30: 8e 31: 26  
32: 17 33: 51 34: 54 35: bf 36: ee 37: 00 38: 01 39: 01  
40: 01 41: 01 42: 01 43: 01 44: 01 45: 01 46: 01 47: 01  
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 64 55: 19  
56: 00 57: 40 58: 41 59: 00 60: 26 61: 30 62: 18 63: 88  
64: 36 65: 00 66: 33 67: e6 68: 10 69: 00 70: 00 71: 18  
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59  
80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36  
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50  
96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 31  
104: 35 105: 30 106: 50 107: 0a 108: 00 109: 00 110: 00 111: fd  
112: 00 113: 38 114: 4c 115: 1e 116: 3d 117: 08 118: 00 119: 0a  
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: a2



THE DISPLAY DATA CHANNEL ( DDC ) 1/2B CONTENT INCLUDING  
(FOR LG ANALOG)

## Vendor/Product Identification

ID Manufacturer Name : PHL  
 ID Product Code : 080A (HEX.)  
 ID Serial Number : 1E240 (DEC.)  
 Week of Manufacture : 1  
 Year of Manufacture : 2002

## EDID Version, Revision

Version : 1  
 Revision : 3

## Basic Display Parameters/Features

Video Input Definition : Analog Video Input  
 0.714V/0.286V (1.00Vpp)  
 without Blank-to-Black Setup  
 Separate Sync  
 Composite Sync  
 Sync on Green  
 no Serration required

Maximum H Image Size : 30  
 Maximum V Image Size : 23  
 Display Transfer Characteristic : 2.2  
 (gamma)

Feature Support (DPMS) : Standby  
 Suspend  
 Active Off

Display Type : RGB color display  
 Preferred Timing Mode : Detailed timing block 1

## Color Characteristics

Red X coordinate : 0.626  
 Red Y coordinate : 0.347  
 Green X coordinate : 0.308  
 Green Y coordinate : 0.588  
 Blue X coordinate : 0.146  
 Blue Y coordinate : 0.119  
 White X coordinate : 0.313  
 White Y coordinate : 0.329

## Established Timings

Established Timings I : 720 x 400 @70Hz (IBM,VGA)  
 640 x 480 @60Hz (IBM,VGA)  
 640 x 480 @67Hz (Apple,Mac II)  
 640 x 480 @72Hz (VESA)  
 640 x 480 @75Hz (VESA)  
 800 x 600 @56Hz (VESA)  
 800 x 600 @60Hz (VESA)  
 Established Timings II : 800 x 600 @72Hz (VESA)  
 800 x 600 @75Hz (VESA)  
 832 x 624 @75Hz (Apple,Mac II)  
 1024 x 768 @60Hz (VESA)  
 1024 x 768 @70Hz (VESA)  
 1024 x 768 @75Hz (VESA)

Manufacturer's timings : Unused

## Detailed Timing #1

Pixel Clock (MHz) : 65  
 H Active (pixels) : 1024  
 H Blanking (pixels) : 320  
 V Active (lines) : 768  
 V Blanking (lines) : 38  
 H Sync Offset (F Porch) (pixels): 24  
 H Sync Pulse Width (pixels) : 136  
 V Sync Offset (F Porch) (lines) : 3  
 V Sync Pulse Width (lines) : 6  
 H Image Size (mm) : 307  
 V Image Size (mm) : 230  
 H Border (pixels) : 0  
 V Border (lines) : 0  
 Flags : Non-interlaced  
 : Normal Display, No stereo  
 : Digital Separate sync.  
 : Negative Vertical Sync.  
 : Negative Horizontal Sync.

## Monitor Descriptor #2

Serial Number : TY 123456

## Monitor Descriptor #3

Monitor Name : PHILIPS 150P

## Monitor Descriptor #4

Monitor Range Limits  
 Min. Vt rate Hz : 56  
 Max. Vt rate Hz : 76  
 Min. Horiz. rate kHz : 30  
 Max. Horiz. rate kHz : 61  
 Max. Supported Pixel : 80

Extension Flag : 0

Check sum : A2 (HEX.)

## EDID data (128bytes)

\*\*\*\*\*  
 0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00  
 8: 41 9: 0c 10: 0a 11: 08 12: 40 13: e2 14: 01 15: 00  
 16: 01 17: 0c 18: 01 19: 03 20: 2e 21: 1e 22: 17 23: 78  
 24: ea 25: 7e 26: a5 27: a0 28: 58 29: 4e 30: 96 31: 25  
 32: 1e 33: 50 34: 54 35: bf 36: ee 37: 00 38: 01 39: 01  
 40: 01 41: 01 42: 01 43: 01 44: 01 45: 01 46: 01 47: 01  
 48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 64 55: 19  
 56: 00 57: 40 58: 41 59: 00 60: 26 61: 30 62: 18 63: 88  
 64: 36 65: 00 66: 33 67: e6 68: 10 69: 00 70: 00 71: 18  
 72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59  
 80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36  
 88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50  
 96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 31  
 104: 35 105: 30 106: 50 107: 0a 108: 00 109: 00 110: 00 111: fd  
 112: 00 113: 38 114: 4c 115: 1e 116: 3d 117: 08 118: 00 119: 0a  
 120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: a2

## DDC data of Digital

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THE DISPLAY DATA CHANNEL ( DDC ) 1/2B CONTENT INCLUDING  
(FOR LG DIGITAL)

## Vendor/Product Identification

ID Manufacturer Name : PHL  
ID Product Code : 080A (HEX.)  
ID Serial Number : 1E240 (DEC.)  
Week of Manufacture : 1  
Year of Manufacture : 2002

## EDID Version, Revision

Version : 1  
Revision : 3

## Basic Display Parameters/Features

Video Input Definition : Digital Video Input  
Compatible with VESA DFP 1.X

Maximum H Image Size : 30  
Maximum V Image Size : 23  
Display Transfer Characteristic : 2.2  
(gamma)

Feature Support (DPMS) : Standby  
Suspend  
Active Off

Display Type : RGB color display  
Preferred Timing Mode : Detailed timing block 1

## Color Characteristics

Red X coordinate : 0.626  
Red Y coordinate : 0.347  
Green X coordinate : 0.308  
Green Y coordinate : 0.588  
Blue X coordinate : 0.146  
Blue Y coordinate : 0.119  
White X coordinate : 0.313  
White Y coordinate : 0.329

## Established Timings

Established Timings I : 720 x 400 @70Hz (IBM,VGA)  
640 x 480 @60Hz (IBM,VGA)  
640 x 480 @67Hz (Apple,Mac II)  
640 x 480 @72Hz (VESA)  
640 x 480 @75Hz (VESA)  
800 x 600 @56Hz (VESA)  
800 x 600 @60Hz (VESA)  
Established Timings II : 800 x 600 @72Hz (VESA)  
800 x 600 @75Hz (VESA)  
832 x 624 @75Hz (Apple,Mac II)  
1024 x 768 @60Hz (VESA)  
1024 x 768 @70Hz (VESA)  
1024 x 768 @75Hz (VESA)  
Manufacturer's timings : Unused

## Detailed Timing #1

Pixel Clock (MHz) : 65  
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V Sync Pulse Width (lines) : 6  
H Image Size (mm) : 307  
V Image Size (mm) : 230  
H Border (pixels) : 0  
V Border (lines) : 0  
Flags : Non-interlaced  
: Normal Display, No stereo  
: Digital Separate sync.  
: Negative Vertical Sync.  
: Negative Horizontal Sync.

## Monitor Descriptor #2

Serial Number : TY 123456

## Monitor Descriptor #3

Monitor Name : PHILIPS 150P

## Monitor Descriptor #4

Monitor Range Limits  
Min. Vt rate Hz : 56  
Max. Vt rate Hz : 76  
Min. Horiz. rate kHz : 30  
Max. Horiz. rate kHz : 61  
Max. Supported Pixel : 80

Extension Flag : 0

Check sum : 4F (HEX.)

\*\*\*\*\*

## EDID data (128bytes)

\*\*\*\*\*

0: 00 1: ff 2: ff 3: ff 4: ff 5: ff 6: ff 7: 00  
8: 41 9: 0c 10: 0a 11: 08 12: 40 13: e2 14: 01 15: 00  
16: 01 17: 0c 18: 01 19: 03 20: 81 21: 1e 22: 17 23: 78  
24: ea 25: 7e 26: a5 27: a0 28: 58 29: 4e 30: 96 31: 25  
32: 1e 33: 50 34: 54 35: bf 36: ee 37: 00 38: 01 39: 01  
40: 01 41: 01 42: 01 43: 01 44: 01 45: 01 46: 01 47: 01  
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 64 55: 19  
56: 00 57: 40 58: 41 59: 00 60: 26 61: 30 62: 18 63: 88  
64: 36 65: 00 66: 33 67: e6 68: 10 69: 00 70: 00 71: 18  
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59  
80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36  
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50  
96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 31  
104: 35 105: 30 106: 50 107: 0a 108: 00 109: 00 110: 00 111: fd  
112: 00 113: 38 114: 4c 115: 1e 116: 3d 117: 08 118: 00 119: 0a  
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 4f

When the serial number inside DDC IC has been changed, the serial number inside EEPROM (in User mode, the serial number of monitor can be found by OSD as shown in Fig. 1 also.) should be changed at the same time.

**Serial number modification in EEPROM (near CPU) for On Screen Display (Factory mode & User mode)**

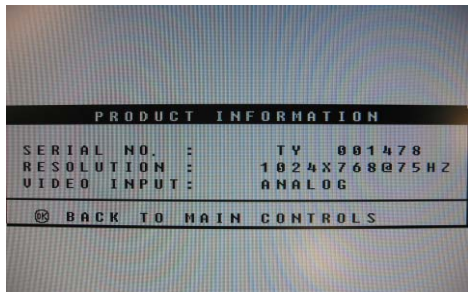


Fig. 1

Due to different communication structures were implement for DDC IC and EEPROM (serial number) application as below.

(15pin D-SUB) ----- CPU ----- DDC IC  
I2C I2C

(15pin D-SUB) ----- CPU ----- EEPROM (OSD -> Serial number)  
RS232 I2C

Update/Modify the serial number of monitor as shown in Fig. 1, please follow the steps as below.

## 1. connection of RS232 COMMUNICATION as shown in Fig. 2

connection of RS232 COMMUNICATION

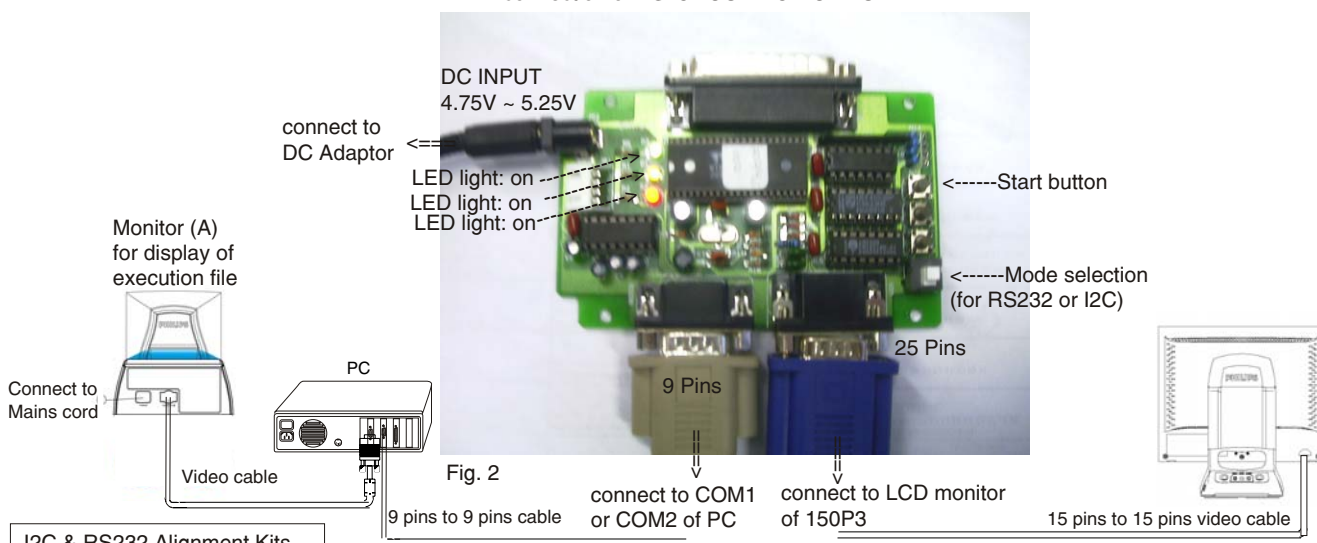


Fig. 2

I2C & RS232 Alignment Kits  
(12nc = 3138 106 10198)

Contents :

1. I2C & RS232 Alignment box
2. 9 pins to 9 pins cable

- Connect DC adaptor (4.75 ~ 5.25Vdc) to Alignment box. 3 LED light should be at ON status at this moment.
- Connect 9 pins cable
- Connect 15pins D-SUB between Monitor and Alignment box. Bring up Fig. 3



Fig. 3

- Press button1, the Red LED light should be at OFF status at this moment. Bring up Fig.5.
- (If it is not at RS232 COMMUNICATION status, Mode selection key can be used for exchange.
- For example : RS232 COMMUNICATION, I2C COMMUNICATION)

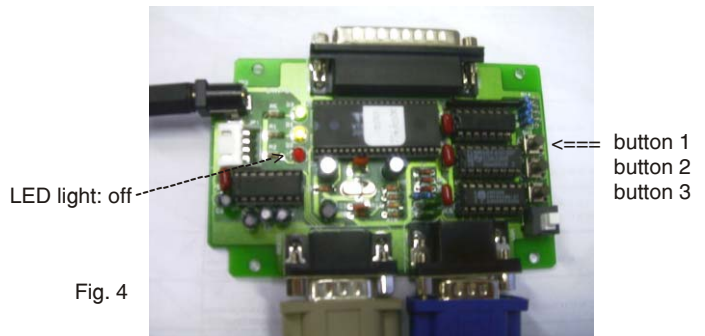


Fig. 4

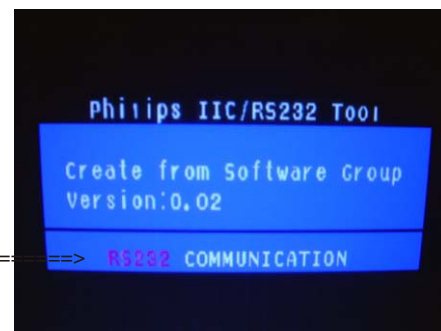


Fig. 5

## 2. Update/Modify serial number by DDCRUN (execution file) in Factory mode.

- Make a directory and copy "DDCRUN.EXE", "DDC.CFG", "DDC.HEX" into folder as shown in Fig. 6.

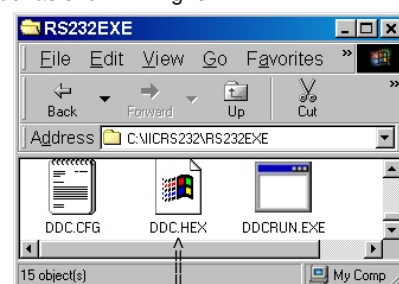


Fig. 6

differ from "PHL15LG.P3-DDC-ANALOG.ddc"



# Serial number modification - EEPROM (OSD)

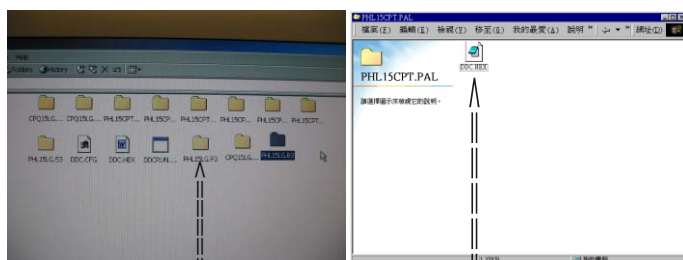


Fig. 6  
PHL15LG.P3 (LG panel)

Fig. 7  
PHL15LG.P3 (LG panel)

The file name of "DDC.HEX" has been defined by source code of DDCRUN.EXE.

The contents of DDC.HEX are different as shown in Fig. 6 & 7. Make sure to put "DDC.HEX" (for example : ddc contents (Fig.6) of PHL15LG.P3) together with "DDC.CFG" & "DDCRUN.EXE" each time. It means [copy different DDC.HEX and put it together with "DDC.CFG" & "DDCRUN.EXE"] each time for application of serial number. CPT panel use PHL15CPT.P3/ DDC.HEX

In DOS mode : (made directory already)  
C:\WINDOWS>CD\ (press Enter)  
C:\>CD IICRS232 (press Enter)  
C:\IICRS232>CD RS232EXE (press Enter)  
C:\IICRS232\RS232EXE>DIR (press Enter)

Folder with "DDC.CFG", "DDC.HEX", "DDCRUN.EXE" as shown in Fig. 8.

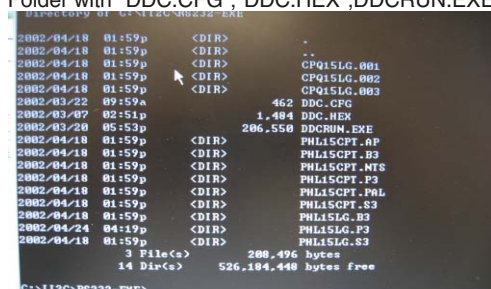


Fig. 8

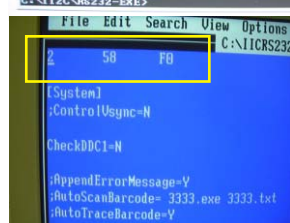


Fig. 9

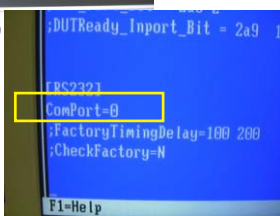


Fig. 10

C:\IICRS232\RS232EXE>EDIT DDC.CFG (press Enter)  
Config. setting "2 58 F0" as shown in Fig. 9 for 150P3 (HUDSON-II).  
Check ComPort setting as shown in Fig. 10 for RS232 (9 pins) cable.

## 3. Serial number application - Barcode format setting

C:\IICRS232\RS232EXE>DDCRUN (press Enter)  
Bring up : definition of Barcode format setting as shown in Fig. 11.

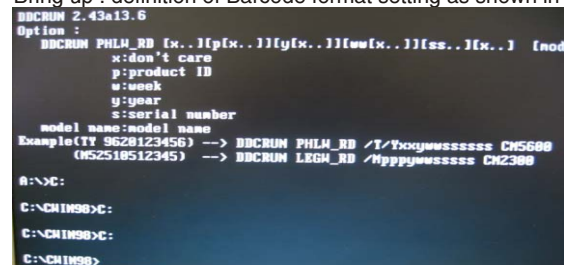


Fig. 11

C:\IICRS232\RS232EXE>DDCRUN PHLW\_RD /T/YxxYWWSSSSSS (press Enter)

Bring up : contents of DDCRUN as shown in Fig. 12.

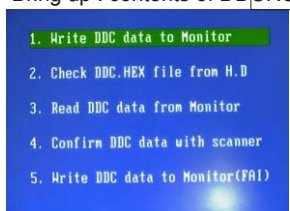


Fig. 12

"PHLW\_RD (fixed name)" was defined by source code of DDCRUN for Philips models already.

As shown in Fig. 12 (1. write DDC data to monitor), press Enter  
Bring up : contents for fill out Serial number as shown in Fig. 13.

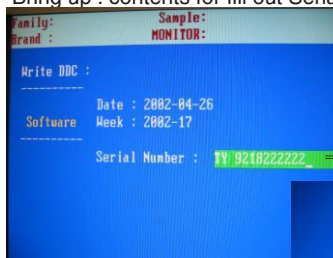


Fig. 13  
Number definition: TY 9218222222  
9 is fixed, 2 for year 2002  
18 for week  
222222 is for new serial number  
For example : Fill out TY 9218222222



Fig. 14

Fig. 15

Press Enter Bring up : Fig. 14 to ask "Entry Factory mode". (Press Enter)  
Bring up : Fig. 15, new series number write down success.

## Access Factory Mode

Step 1 : Turn off monitor.

Step 2 : [Push Menu " OK " & " AUTO " buttons at the same time and hold it ] + [Press power " ⏻ " to turn on monitor button and release it instantly], Bring up Fig. 16

Press Enter

Bring up : Fig. 17 (a few seconds only)

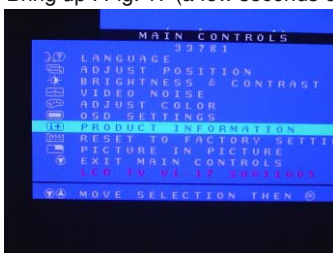


Fig. 16

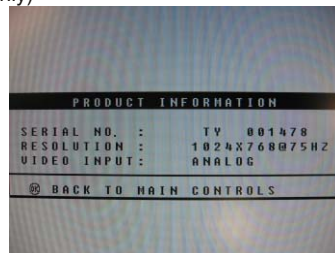


Fig. 17 Serial number - (Before)

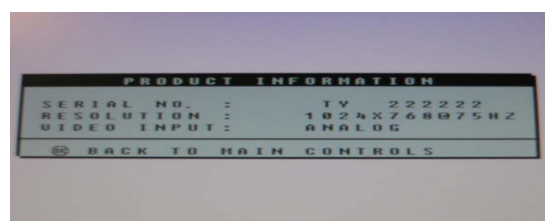
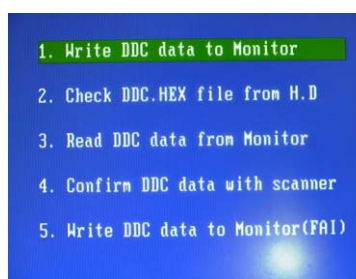


Fig. 18

Serial number - (After)

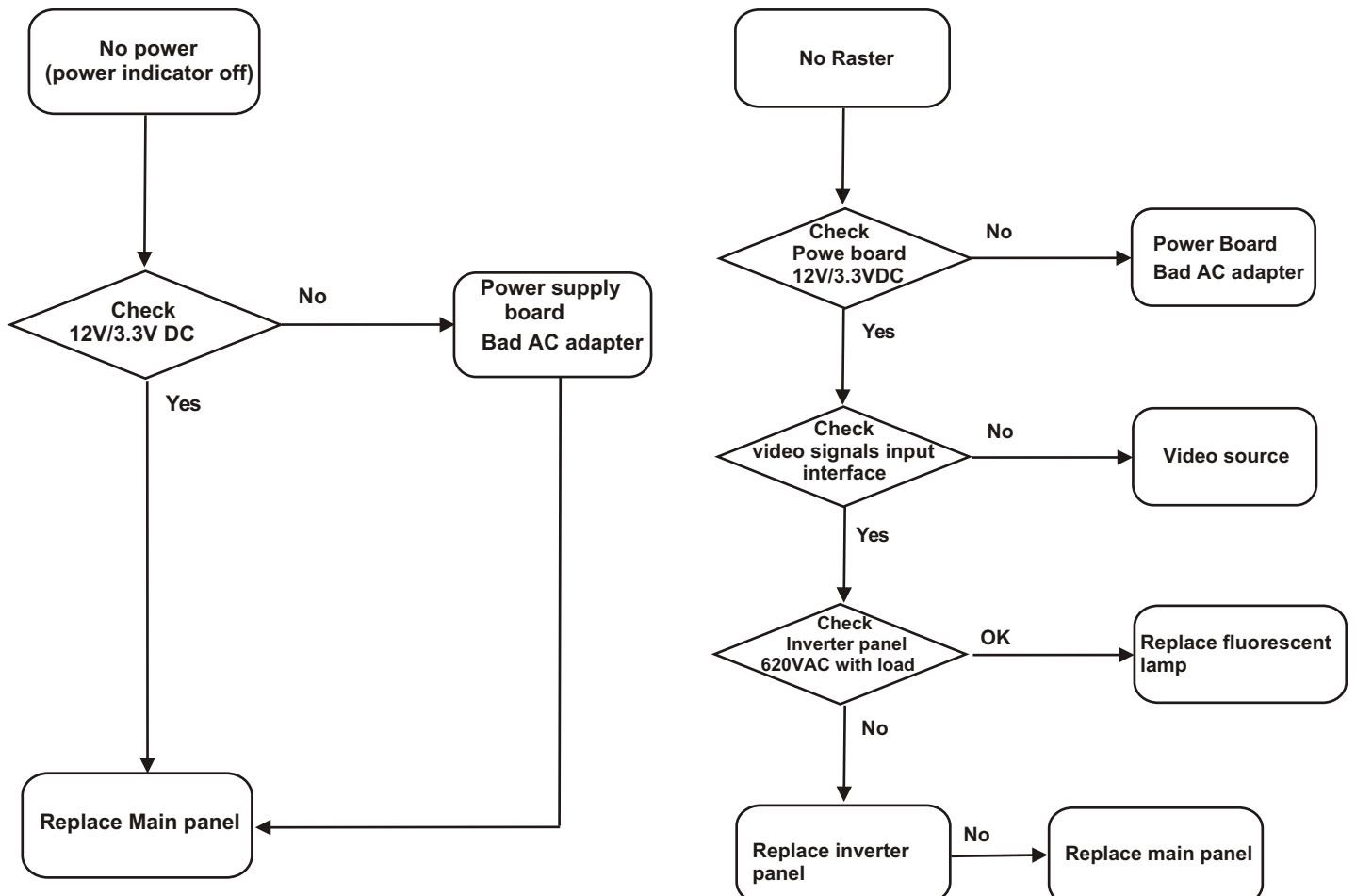
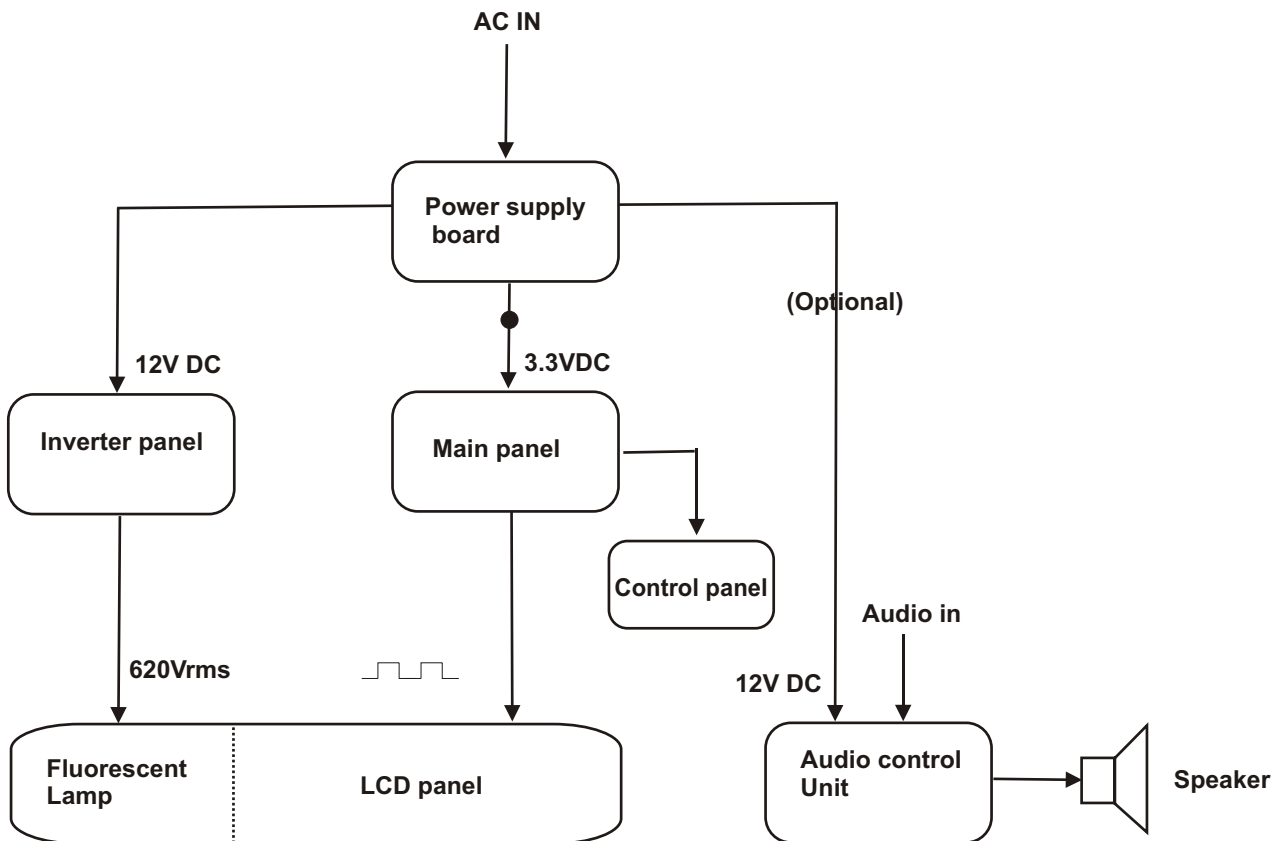


<==Fill out "Q" : Quit  
Serial number application.

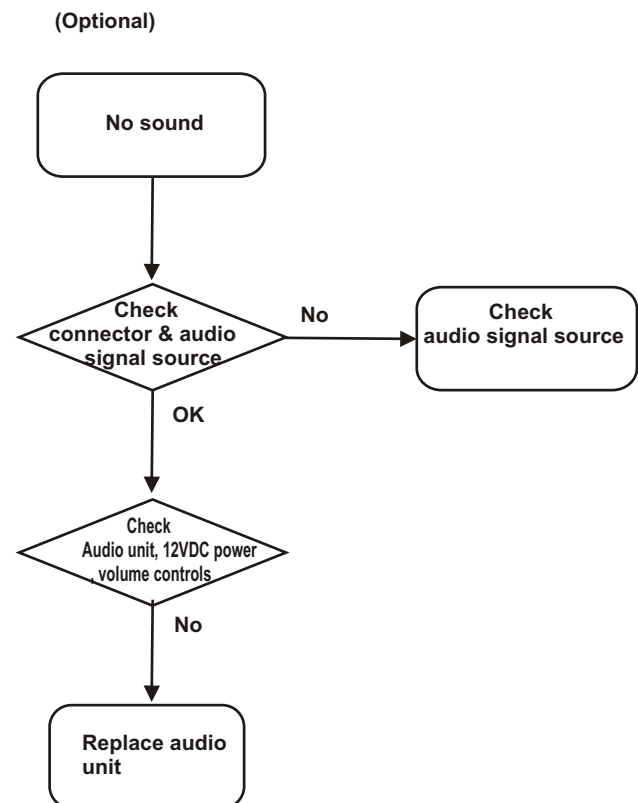
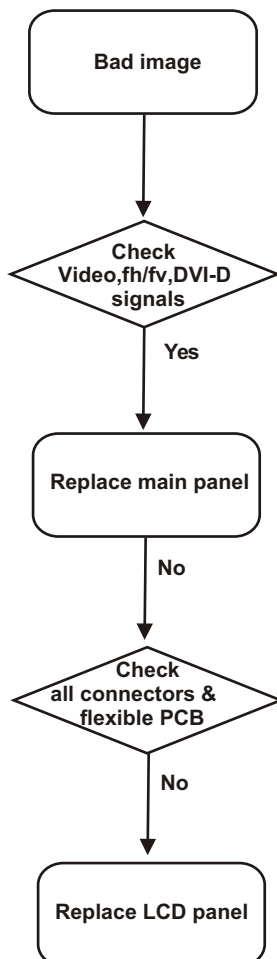
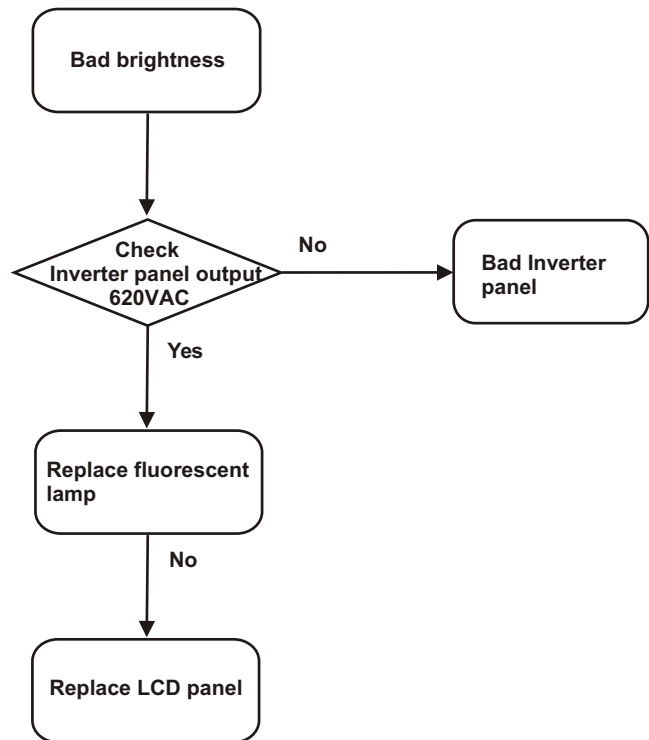
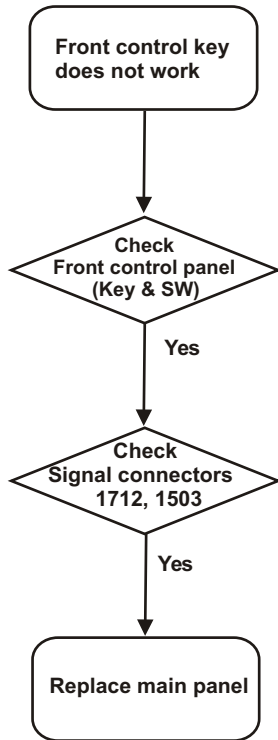


<==Press "ESC" : Go back to DOS mode. Then, finish.

## Block Diagram



## Repair Flow Chart





## LCD COLOUR ANALYZER - CA110

### 1. SUMMARY

The LCD Colour Analyzer CA-110 was designed to upgrade the white-balance process on production lines for colour LCD televisions and computer colour LCD panels in the colour LCD industry. The CA-110 consists of a main unit and a measuring probe. The measuring probe utilizes an optical system suitable for measurement of colour LCDs and is equipped with a viewfinder to verify the area to be measured.

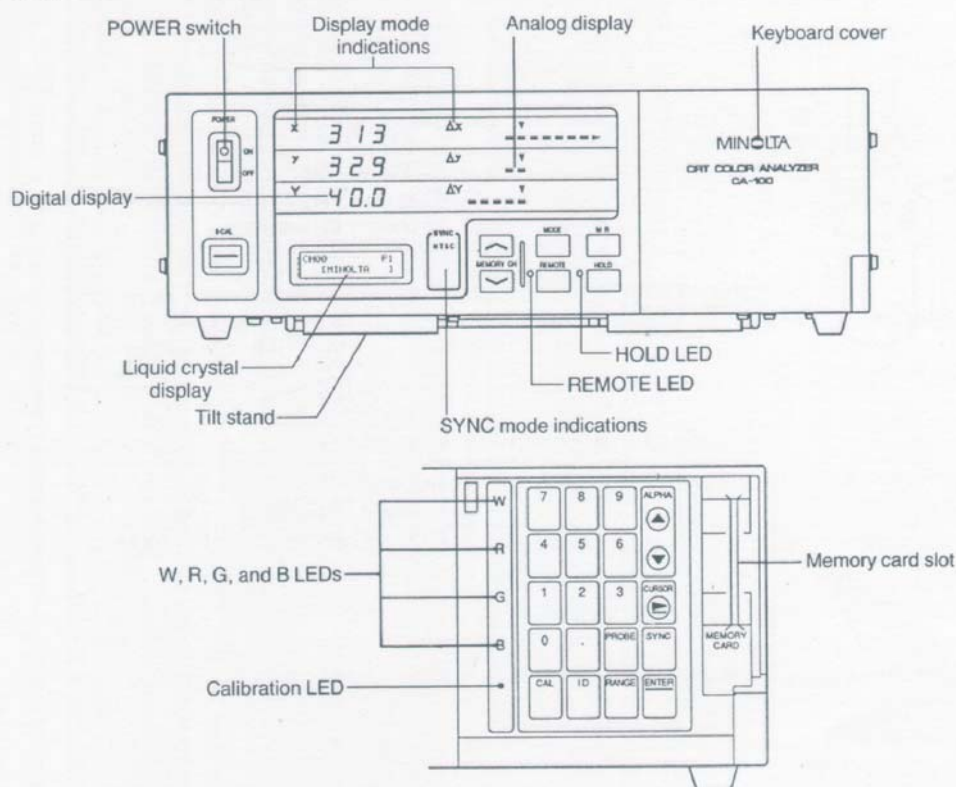
### 2. APPLICATIONS

- \* White-balance adjustment and inspection on LCD production lines.
- \* Quality control and shipping inspection by LCD manufacturers.
- \* Inspection of LCDs upon receipt by computer manufacturers.

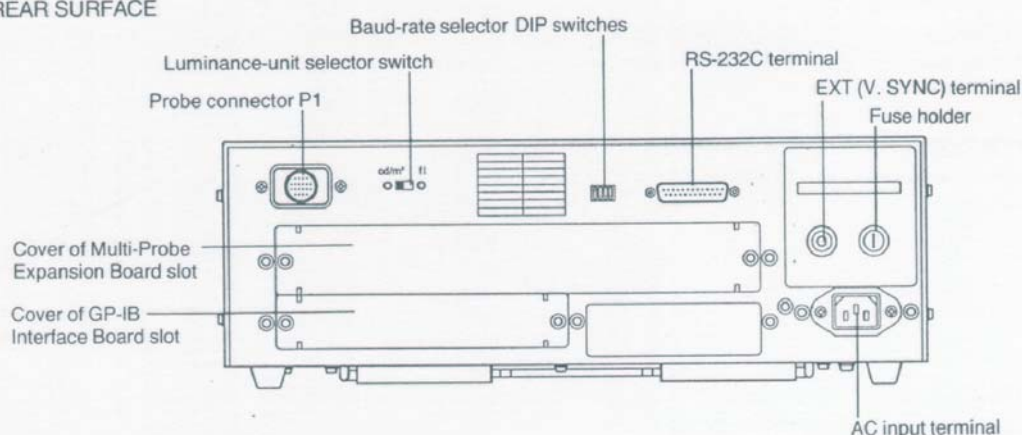
#### NAMES OF PARTS

##### Main Unit

##### FRONT SURFACE



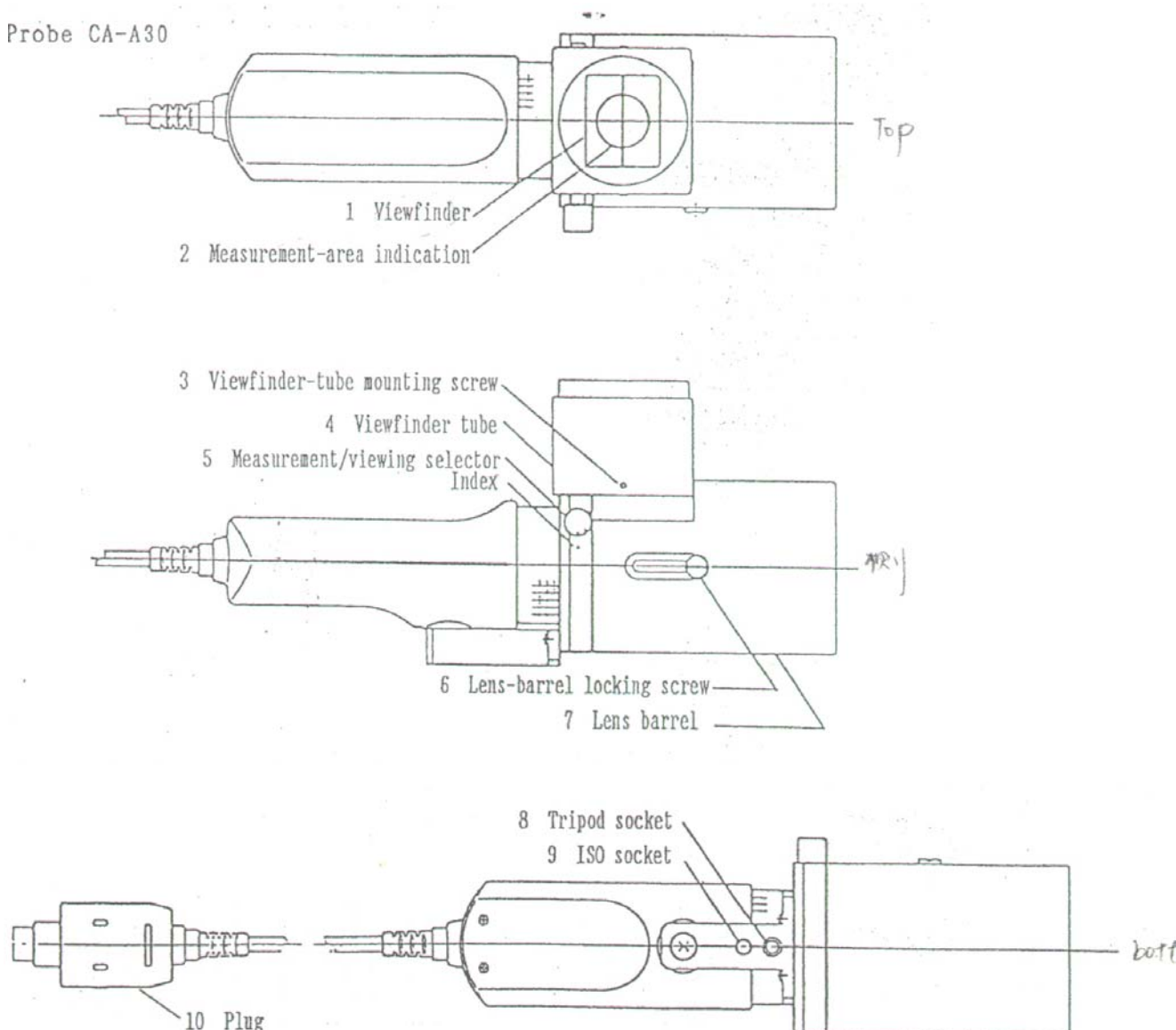
##### REAR SURFACE



## Colour Adjustment

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Probe CA-A30



- |                                   |   |
|-----------------------------------|---|
| 1. Viewfinder                     | Shows image seen by measuring probe.  |
| 2. Measurement-area indication    | Indicates area to be measured.  |
| 3. Viewfinder-tube mounting screw | Removing these two screws (one on each side) allows the viewfinder tube to be removed to clean viewfinder, etc. |
| 4. Viewfinder tube                | Can be moved to minimize the effects of surrounding light and provide the best view of the viewfinder image.    |
| 5. Measurement/viewing selector   | Moves internal mirror; set to ○ for measurement and to ● for viewing or for zero calibration.                   |
| 6. Lens-barrel locking screw      | Locks lens barrel at a fixed position.  |
| 7. Lens barrel                    | Can be moved back and forth to set measurement angle.   |
| 8. Tripod socket                  | Can be used to mount measurement probe on a tripod. Depth: 6mm.   |
| 9. ISO socket                     | Can be used to mount measurement probe. ISO Ø5mm, depth: 6mm  |
| 10. Plug                          | Used to connect measuring probe to main unit or optional Multi-Probe Expansion Board.                           |

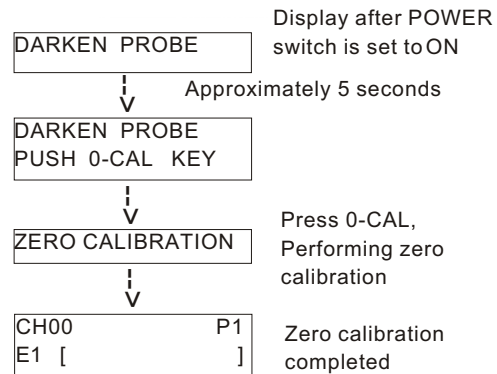
## ZERO CALIBRATION

Zero calibration is performed to determine the output of the measuring probe when no light reaches the sensor and to set this as the zero point to which all other measurements are referenced. Zero calibration must be performed after the POWER switch has been set ON before taking any measurements.

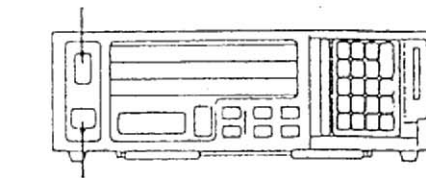
To perform zero calibration :

- \* Before performing zero calibration, check that the measuring probe has been connected to probe connector P1.

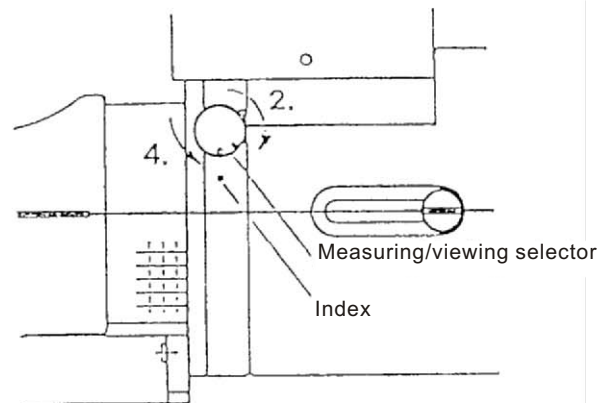
1. Check that the POWER switch is set to ON.
  2. Set the measuring/viewing selector to the (viewing) position. (An image can be seen in the viewfinder, but no light will reach the sensor.)
  3. Press 0-CAL.
- \* If zero calibration is being performed immediately after the POWER switch has been set to ON, press 0-CAL after "PUSH 0-CAL KEY" appears in the liquid crystal display.
4. Set the measuring/viewing selector to the position. Measurements will be started immediately.



1. POWER switch



3. 0-CAL



- "E1" will appear in the liquid crystal display the first time the CA-110 is used after shipment because no standard color has been set.
- Zero calibration can be performed at any time, even if "PUSH 0-CAL KEY" is not shown in the liquid crystal display.

### Note:

- If the luminance of the LCD to be measured is 5.00cd/m<sup>2</sup> (1.46 fL) or less, wait at least five minutes after setting POWER switch to ON before performing zero calibration. Also, when measuring LCDs of low luminance, zero calibration should be performed approximately once an hour to ensure accuracy.
- If the ambient temperature changes after zero calibration has been performed, perform zero calibration again.
- Do not press any key while zero calibration is being performed. If a key is pressed, the time required for zero calibration will become longer.

To check if zero calibration was performed correctly, place the receptor area of the probe face down on a flat surface so that no light reaches the receptor area.

If the display shown at right appears in the liquid crystal display, perform zero calibration again.

- Even when "OFFSET ERROR" appears in the liquid crystal display, if light reaches the receptor area of the measuring probe, measured values will appear in the digital and analog displays. However, these values will not be accurate.

OFFSET ERROR  
PUSH 0-CAL KEY

If any other display is shown, zero calibration was performed correctly.

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### SETTING MEASUREMENT AREA

Measurement areas of  $\varnothing 25\text{mm}$  and  $\varnothing 50\text{mm}$  can be selected by extending or retracting the lens barrel. The  $\varnothing 25\text{mm}$  measurement area can be used for measuring LCDs with 2 - inch or greater diagonals: the  $\varnothing 50\text{mm}$  measurement area can be used for measuring LCDs with 4 - inch or greater diagonals.

#### Set the measurement area :

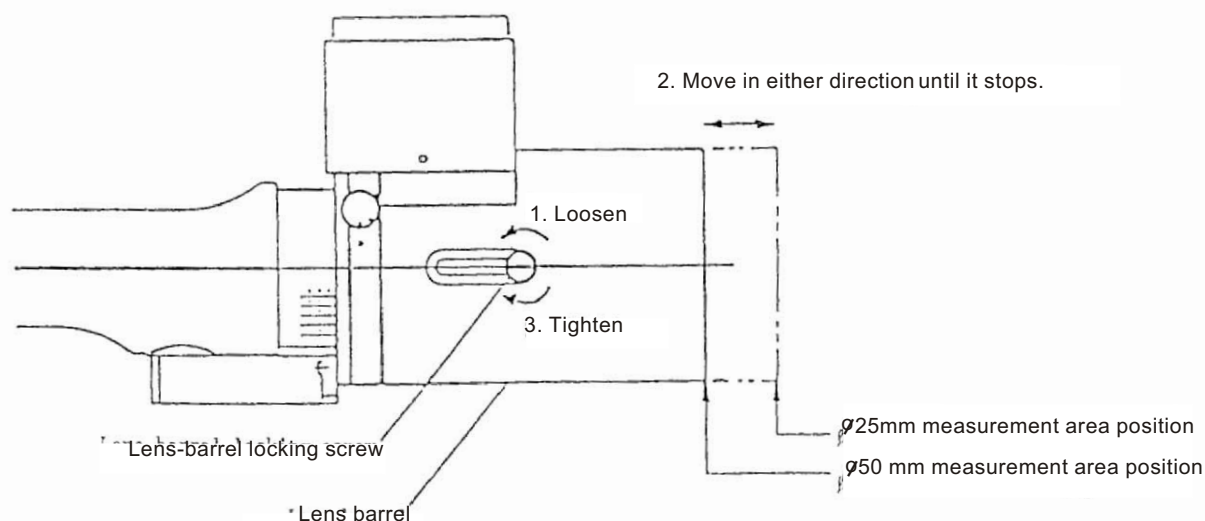
Using a slotted screwdriver, loosen the lens - barrel locking screw.

Slide the lens barrel to the position corresponding to the desired measurement area. The lens barrel should be slid in the desired direction until it stops.

Extending the lens barrel fully sets the  $\varnothing 25\text{mm}$  measurement area: retracting the lens barrel fully sets the  $\varnothing 50\text{mm}$  measurement area.

Use the screwdriver to tighten the lens - barrel locking screw and lock the lens barrel in position.

Changing the measurement area also changes the measurement angle. this may result in differences between values measured with the  $\varnothing 25\text{mm}$  measurement area and those measured with the  $\varnothing 50\text{mm}$  measurement area to the viewing - angle characteristics of the LCD. For this reason, it is recommended that the measurement area be constant for all measurements.



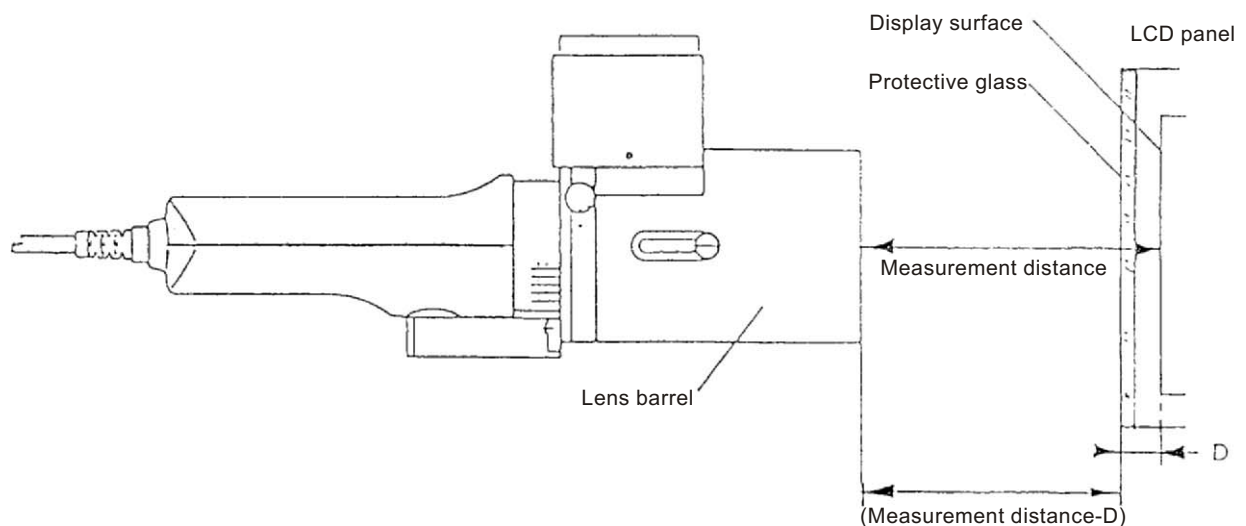
## SETTING MEASUREMENT DISTANCE

The measurement distance (the distance from the front of the measuring probe's lens barrel to the display surface of the LCD ) should be set using a ruler according to the procedure below.

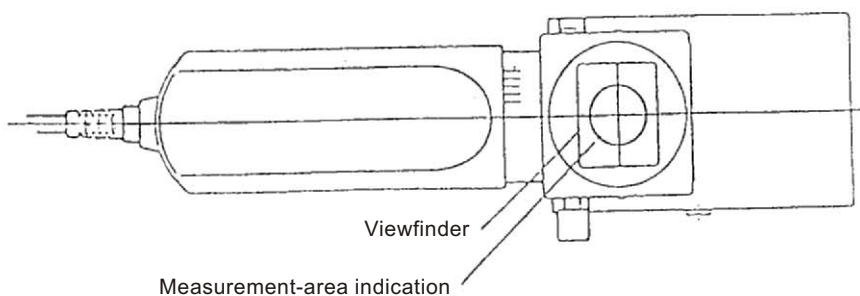
1. Mount the measuring probe on a tripod or other stand and mount the LCD on a suitable stand.
2. While using a ruler to measure the distance from the front of the measuring probe's lens barrel to the LCD's display surface, move the measuring probe or the LCD until the distance is the correct distance for the measurement area in use.

measurement area	∅ 25mm	∅ 50mm
measurement distance*	135mm+/-5mm	210mm+/-10mm

\* Distance from the tip of the measuring probe's lens barrel to the LCD's display surface.



3. While looking through the viewfinder, move the measuring probe or LCD until the LCD section to be measured is inside the measurement-area indication in the viewfinder.





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### White Balance Adjustment

#### Alignment procedure

1. Turn on 150P LCD monitor.
2. Turn on the Timing/Pattern generator. See Fig. 1  
Setting generator to provide CROSS-Hatch pattern at  
Resolution : 1024 x 768  
Timing : H= 48 KHz  
V= 60 Hz
3. Preset LCD colour Analyzer CA-110
  - Remove the lens protective cover of probe CA-A30.
  - Set Measuring/viewing selector to Measuring position for reset analyzer. (Zero calibration) as Fig. 2
  - Turn on the colour analyzer (CA-110).
  - Press 0-CAL button to starting reset analyzer. See Fig. 3



Fig. 1

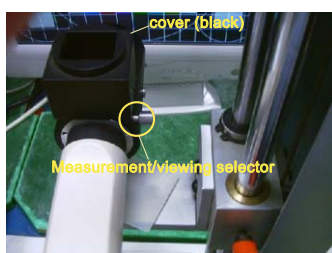
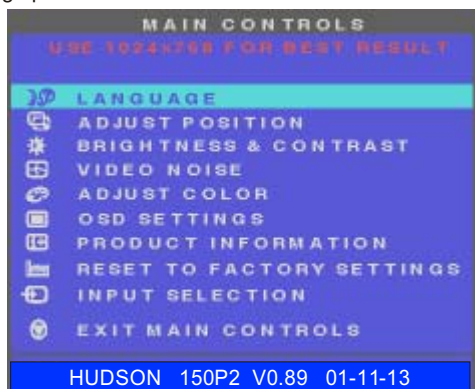


Fig. 2



Fig. 3

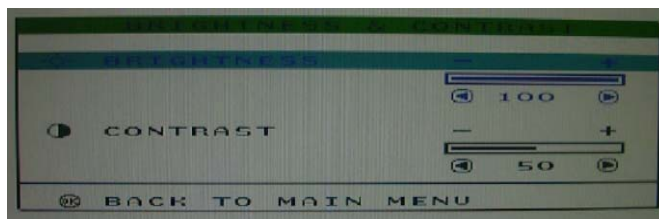
4. Entering factory adjustment mode of LCD Monitor.
  - To hold **OK** and **AUTO** buttons then power on the monitor. Press **OK** to bring up OSD menu for confirmation.



↑ Factory mode

Note : after alignment, please reset OSD to users mode for normal operation. Otherwise, the monitor would not entering power saving mode and showing full white picture all the time as no video signal supplied. To leave factory mode by restart the monitor.

5. Adjust OSD menu to lower position of screen (i.g. adjust V-position to value 0 at submenu of OSD Setting).
6. Setting Brightness and Contrast
  - Adjust Brightness to value 100.
  - Adjust Contrast to value 50.

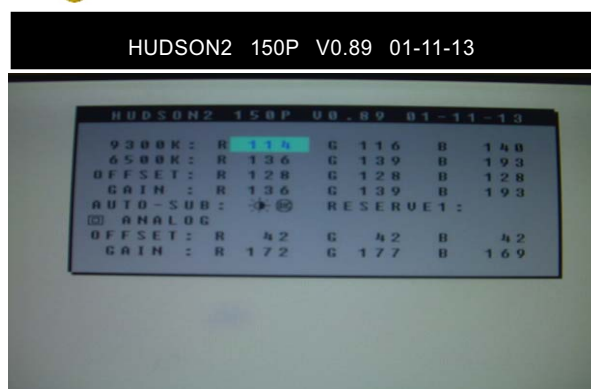


7. Switch light probe to Viewing position.
8. Move the Lens barrel forward or backward to get clear image as shown in Fig. 4
9. Switch light probe to Measuring position. It should be able to indicate colour value on the CA-110.



Fig. 4

10. Setting pattern to full white picture.
11. Press **OK** then select hudson150P v1.56D 01-03-09 by **↓** button.
12. Press **OK** to bring up submenu as following windows.



13. Press **↑** or **↓** buttons to select R G B. Increase/decrease value by press **←** or **→** buttons until the X, Y co-ordinates as below:

9300 K  $x = 0.281 \pm 0.005$   
 $y = 0.311 \pm 0.005$   
 $Y \geq 200$  nits  
 Fig. 5

14. Setting X, Y value listed as below:

$X = 0.312 \pm 0.005$   
 $Y = 0.338 \pm 0.005$   
 $Y \geq 200$  nits  
 Fig. 6

- Alignment hits: 1. R for x value , G for y value, B for Y value on the colour analyzer.
2. If the colour analyzer has been calibrated and preset colour temperature in it. Please switch to correct setting in accordance with colour settings.



## 9300 K



Fig. 5

### 15. Gray scale checking

- Switch Timing/pattern generator to  
Pattern: 32 gray scale  
Timing: 1024 X 768 60Hz 48KHz
- Setting both Brightness and Contrast to 50 (Value).
- Check black and white scale are visible clearly across the screen.  
See Fig. 7



Fig. 7

Note: The bright scale will be saturated, if Y is too large. The dark scale will be invisible, if Y is too small. Re-alignment or review procedure again to correct this.

## 6500 K



Fig. 6

◀◀ Go to cover page

## 0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

## 1. Servicing of SMDs (Surface Mounted Devices)

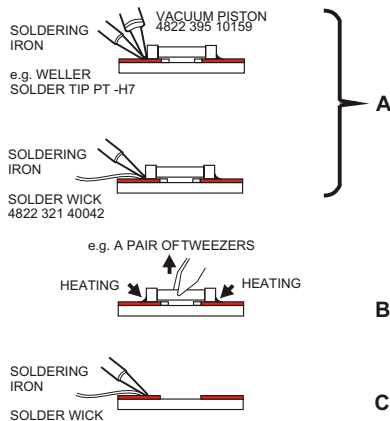
### 1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

### 1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

### 1.3 Caution on removal

- When handling the soldering iron, use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should

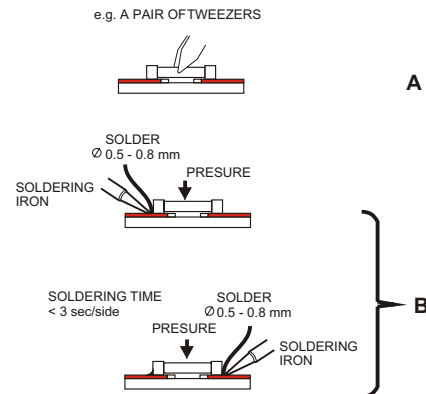
preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).

- The chip, once removed, must never be reused.

### 1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig. 2A).
- Next complete the soldering of the terminals of the component (see Fig. 2B).

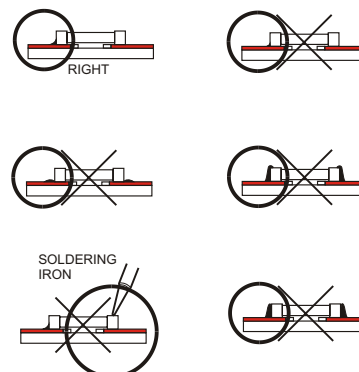
Fig. 2 MOUNTING



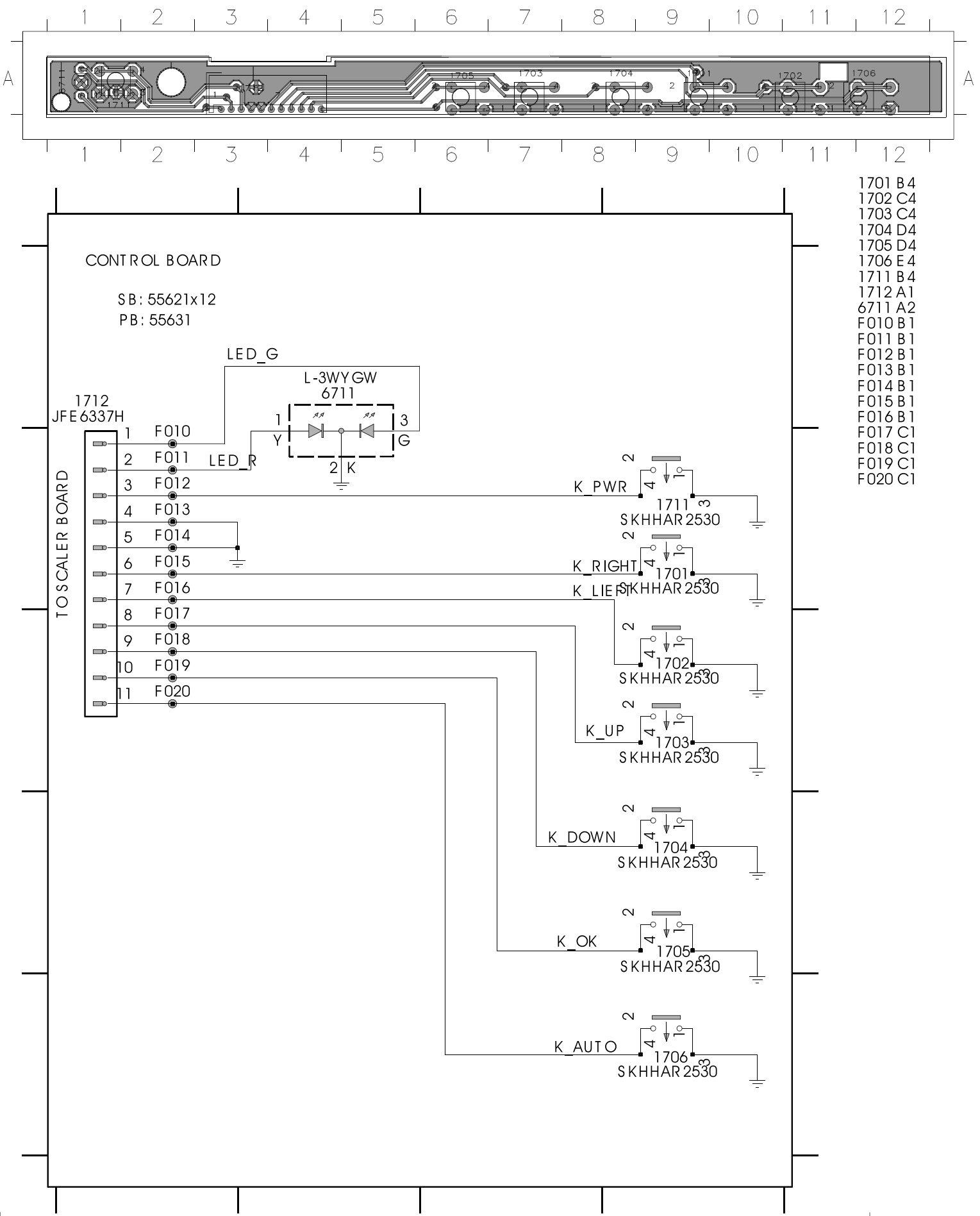
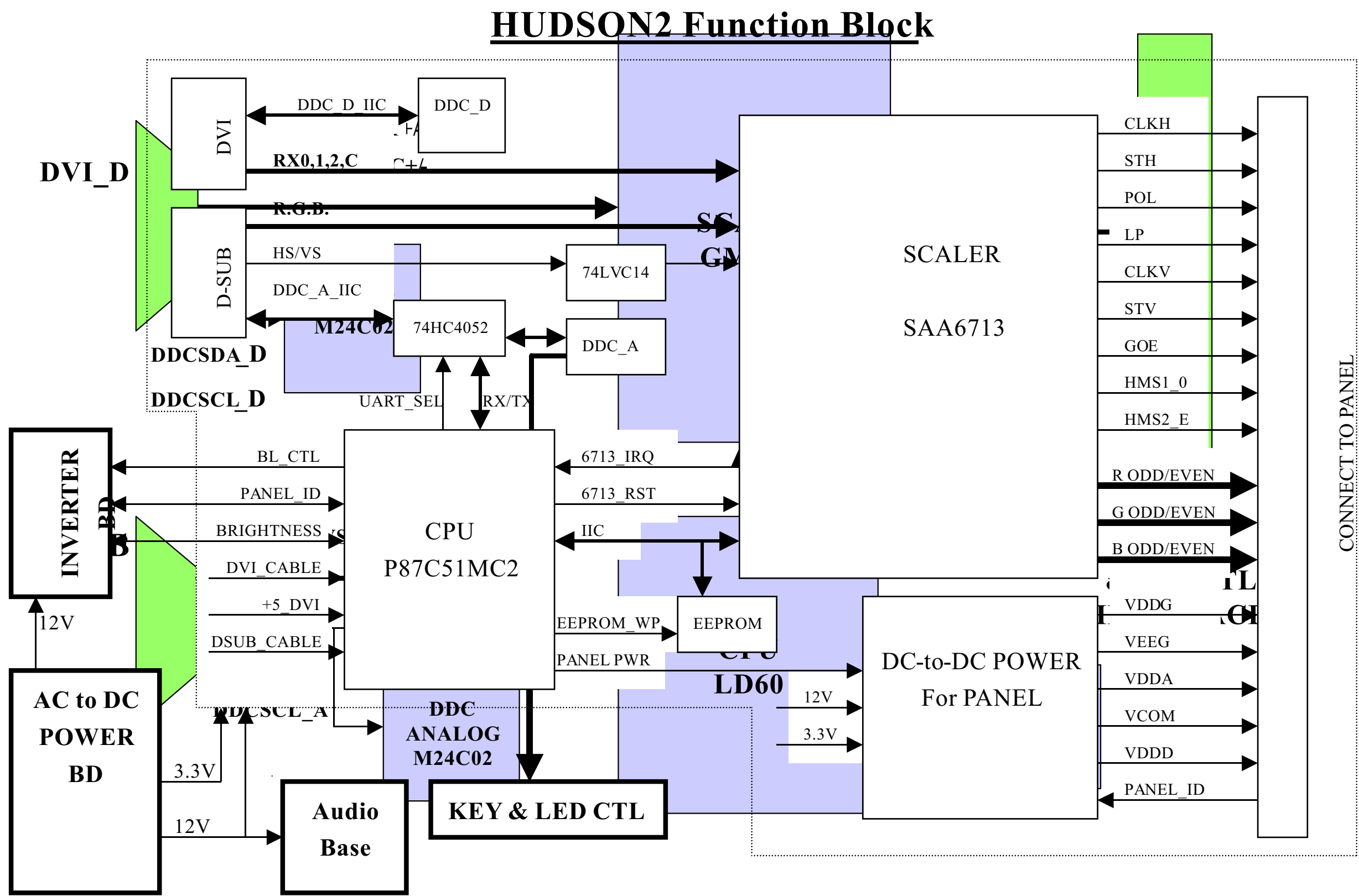
## 2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



Block Diagram of ScalerBoard for HUDSON 150P

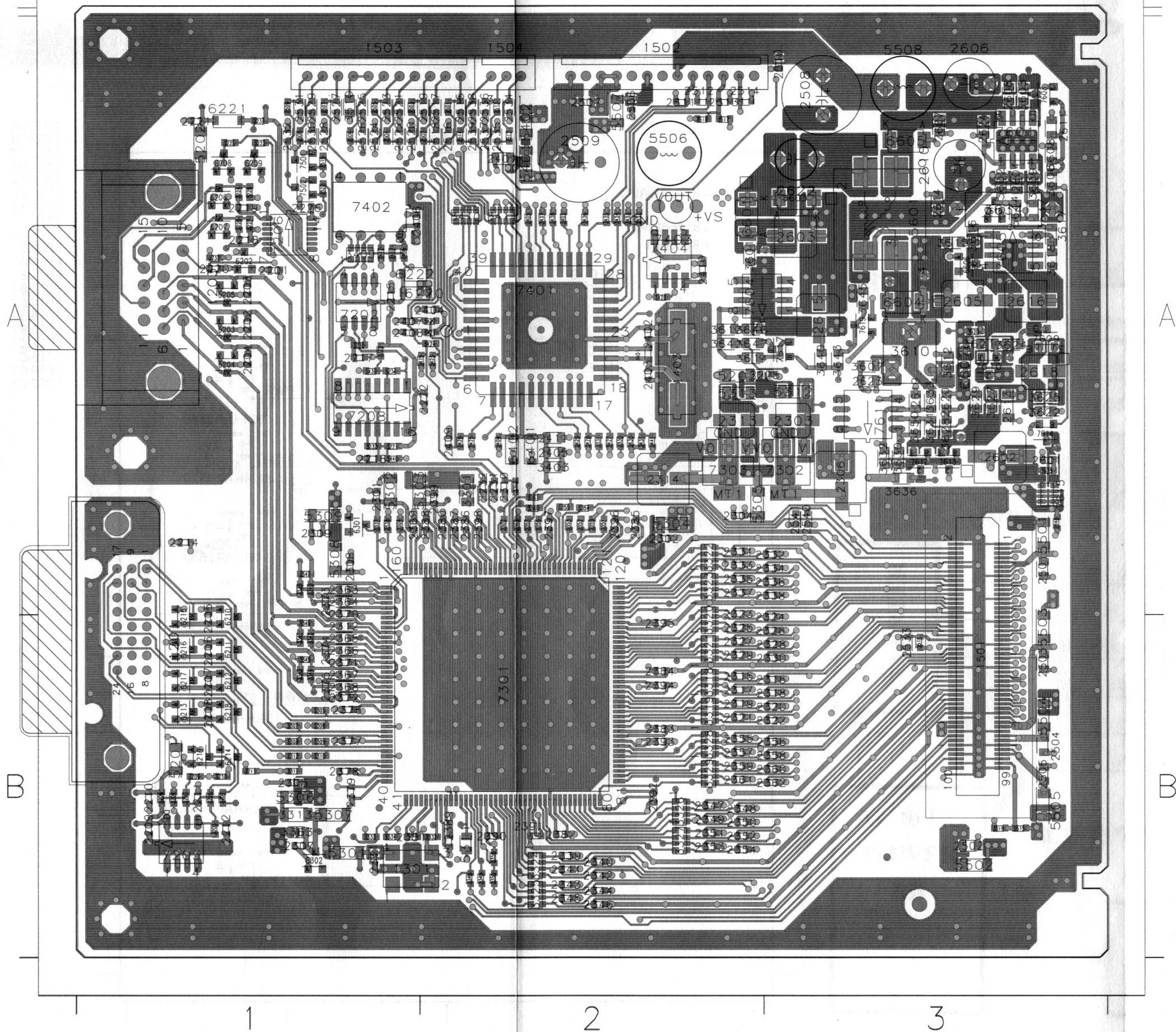




# Scaler Board C.B.A.

2

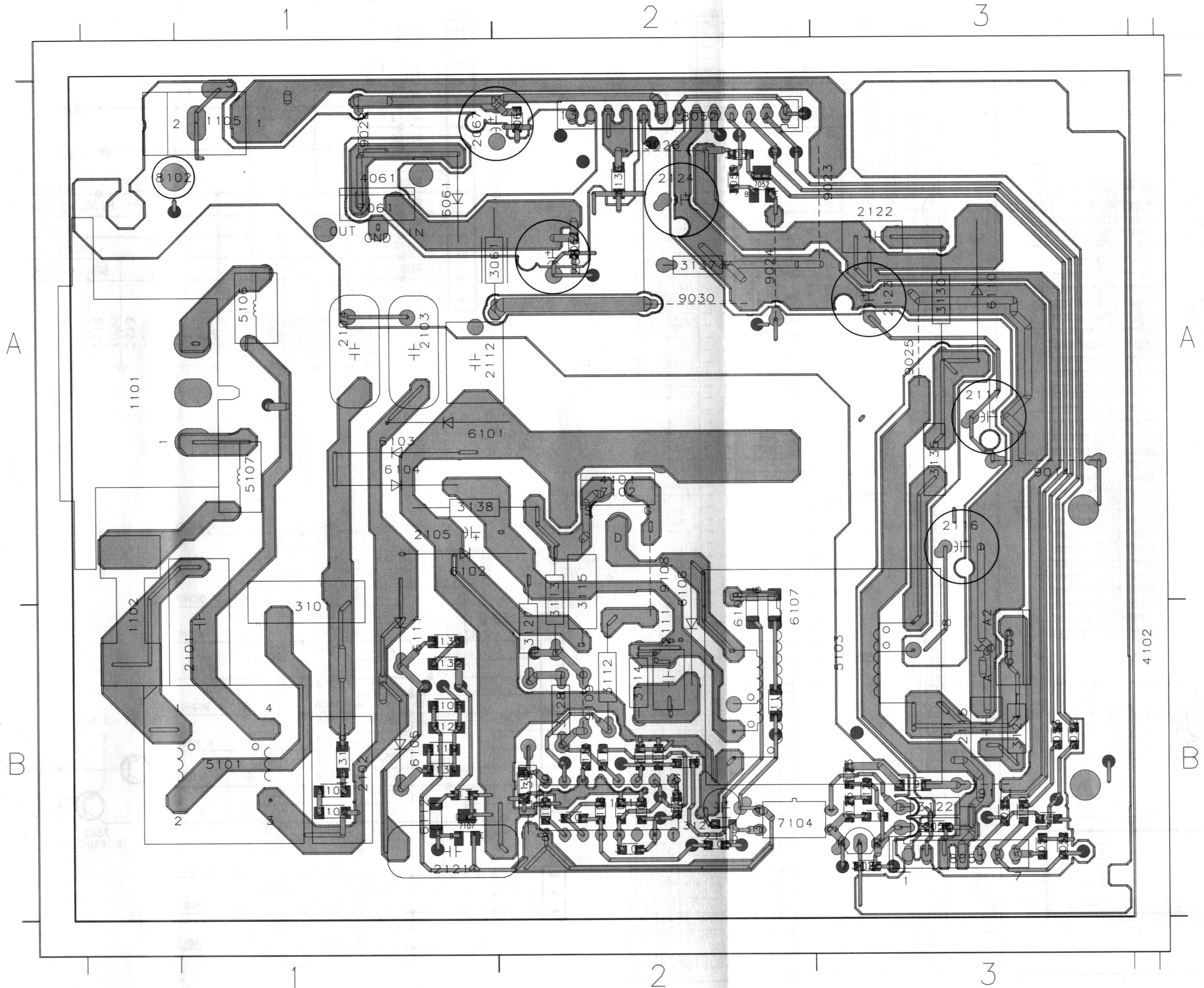
3



#	GRID BOARD			2321	B2	B	2321	B2	B	2321	B2	B	2321	B2	B	2321	B2	B	2375	B1	B
#	REF	LABEL	SIDE	2322	B3	B	2322	B3	B	2322	B3	B	2322	B3	B	2322	B3	B	2376	B1	B
#				2323	A2	B	2323	A2	B	2323	A2	B	2323	A2	B	2323	A2	B	2377	B1	B
1301	B1	B		2324	B3	B	2324	B3	B	2324	B3	B	2324	B3	B	2324	B3	B	2378	B1	B
1403	A2	B		2325	B2	B	2325	B2	B	2325	B2	B	2325	B2	B	2325	B2	B	2379	B1	B
1501	B3	B		2326	B3	B	2326	B3	B	2326	B3	B	2326	B3	B	2326	B3	B	2380	A2	B
2201	A1	B		2327	B2	B	2327	B2	B	2327	B2	B	2327	B2	B	2327	B2	B	2381	B1	B
2202	A1	B		2328	B3	B	2328	B3	B	2328	B3	B	2328	B3	B	2328	B3	B	2382	B2	B
2203	A1	B		2329	B2	B	2329	B2	B	2329	B2	B	2329	B2	B	2329	B2	B	2383	B2	B
2204	A1	B		2330	B3	B	2330	B3	B	2330	B3	B	2330	B3	B	2330	B3	B	2384	B2	B
2205	B1	B		2331	A2	B	2331	A2	B	2331	A2	B	2331	A2	B	2331	A2	B	2385	A2	B
2206	B1	B		2332	A3	B	2332	A3	B	2332	A3	B	2332	A3	B	2332	A3	B	2386	A2	B
2207	B1	B		2333	A2	B	2333	A2	B	2333	A2	B	2333	A2	B	2333	A2	B	2387	A2	B
2208	B1	B		2334	A3	B	2334	A3	B	2334	A3	B	2334	A3	B	2334	A3	B	2388	A2	B
2209	B1	B		2335	A2	B	2335	A2	B	2335	A2	B	2335	A2	B	2335	A2	B	2389	B2	B
2210	B1	B		2336	A3	B	2336	A3	B	2336	A3	B	2336	A3	B	2336	A3	B	2390	B2	B
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2214	A1	B		2339	B2	B	2339	B2	B	2339	B2	B	2339	B2	B	2339	B2	B	2393	B2	B
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2231	A2	B		2350	B2	B	2350	B2	B	2350	B2	B	2350	B2	B	2350	B2	B	2405	A2	B
2232	A2	B		2351	B2	B	2351	B2	B	2351	B2	B	2351	B2	B	2351	B2	B	2406	A1	B
2301	A1	B		2352	B2	B	2352	B2	B	2352	B2	B	2352	B2	B	2352	B2	B	2407	A1	B
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2306	A3	B		2357	B2	B	2357	B2	B	2357	B2	B	2357	B2	B	2357	B2	B	2501	A3	B
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2322	B3	B		2373	A1	B	2373	A1	B	2373	A1	B	2373	A1	B	2373	A1	B	2519	A2	B
2323	A2	B		2374	B1	B	2374	B1	B	2374	B1	B	2374	B1	B	2374	B1	B	2520	A1	B
2324	B3	B																	2521	A1	B
2325	B2	B																	2522	A1	B
2326	B3	B																	2523	A1	B
2327	B2	B																	2524	A1	B
2328	B3	B																	2525	A1	B
2329	B2	B																	2526	A1	B
2330	B3	B																	2527	A1	B
2331	A2	B																	2528	A1	B
2332	A3	B																	2529	A1	B
2333	A2	B																	2530	A1	B
2334	A3	B																	2531	A1	B
2335	A2	B																	2532	A1	B
2336	A3	B																	2533	B3	B
2337	A2	B																	2534	A2	B



## Power Board (C.B.A)

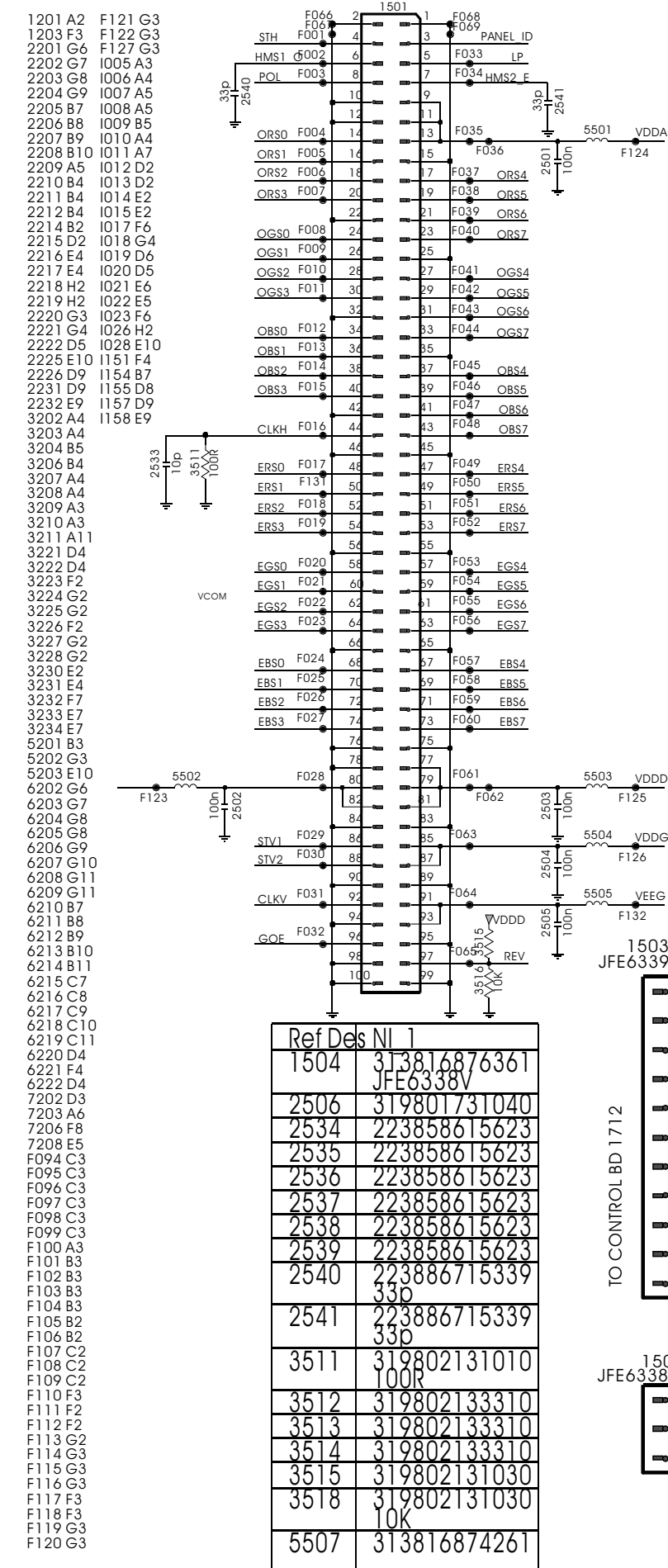
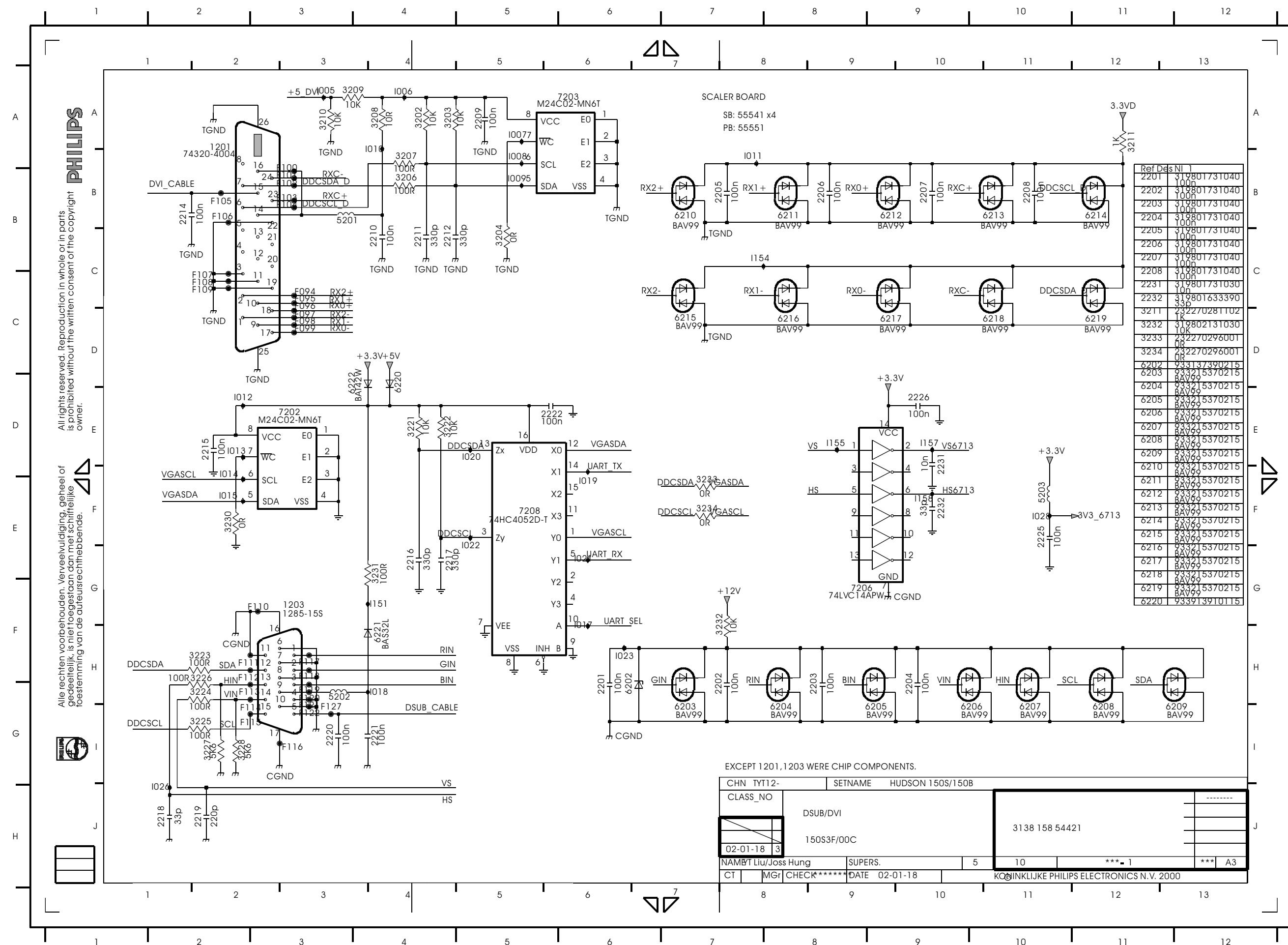


 Go to cover page

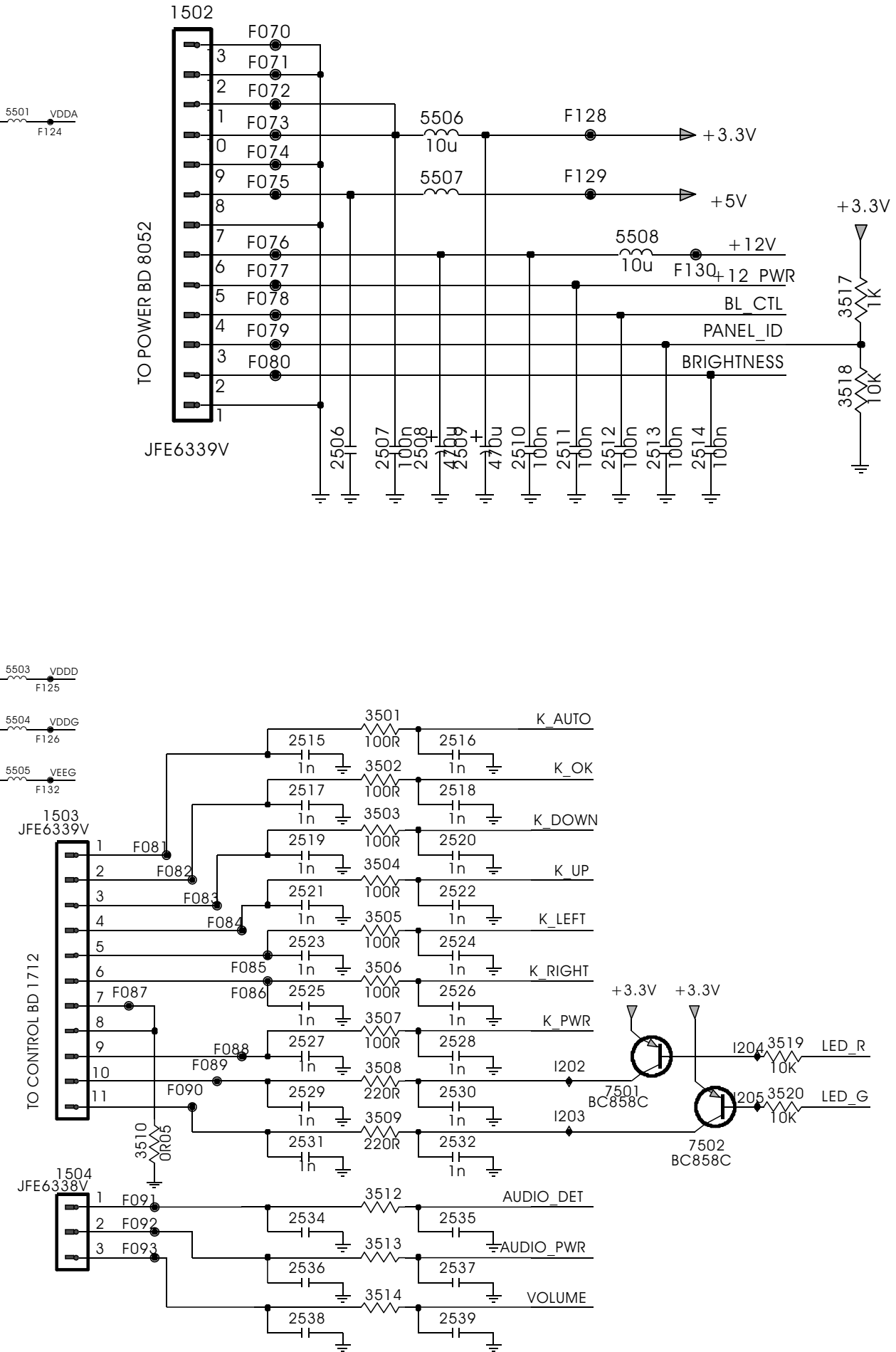
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1102	B1	B
1105	A1	B
2061	A2	B
2067	A1	B
2101	B1	B
2102	B1	B
2103	A1	B
2104	A1	B
2105	A1	B
2111	B2	B
2112	A1	B
2113	B2	B
2115	B3	B
2116	A3	B
2117	A3	B
2121	B1	B
2122	A3	B
2123	A3	B
2124	A2	B
3061	A2	B
3101	B1	B
3112	B2	B
3113	A2	B
3114	B2	B
3115	A2	B
3121	B3	B
3122	B3	B
3127	B2	B
3128	B2	B
3129	B3	B
3130	A3	B
3135	A3	B
3137	A2	B
3138	A1	B
3139	B2	B
4061	A1	B
4101	A2	B
4102	B3	B
5101	B1	B
5103	B3	B
5106	A1	B
5107	A1	B
6061	A1	B
6101	A1	B
6102	A1	B
6103	A1	B
6104	A1	B
6105	B1	B
6106	A2	B
6109	B3	B
6110	A3	B
6111	B1	B
7061	A1	B

#	GRID BOARD	
# REF	LABEL	SIDE
#	-----	
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6111	B1	B
7061	A1	B
7101	B2	B
7102	A2	B
7104	B2	B
7106	B3	B
8051	B3	B
8052	A2	B
8102	A1	B
9014	A3	B
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9026	A2	B
9028	A1	B
2051	B3	A
2052	B3	A
2056	B3	A
2057	B3	A
2062	A2	A
2065	A2	A
2106	B2	A
2107	B2	A
2108	B2	A
2109	B2	A
2110	B2	A
2114	B2	A
2118	B2	A
2119	B3	A
2120	B3	A
3051	A2	A
3052	B3	A
3053	B3	A
3056	B3	A
3059	A2	A
3102	B1	A
3103	B1	A
3105	B1	A
3106	B2	A
3107	B2	A
3108	B2	A
3109	B2	A
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3111	B2	A
3116	B2	A
3117	B2	A
3118	B2	A
3119	B1	A
3120	B1	A
3123	B3	A
3124	B2	A
3125	B3	A
3126	B3	A

### Schematic Diagram (Input DVI & D- SUB)

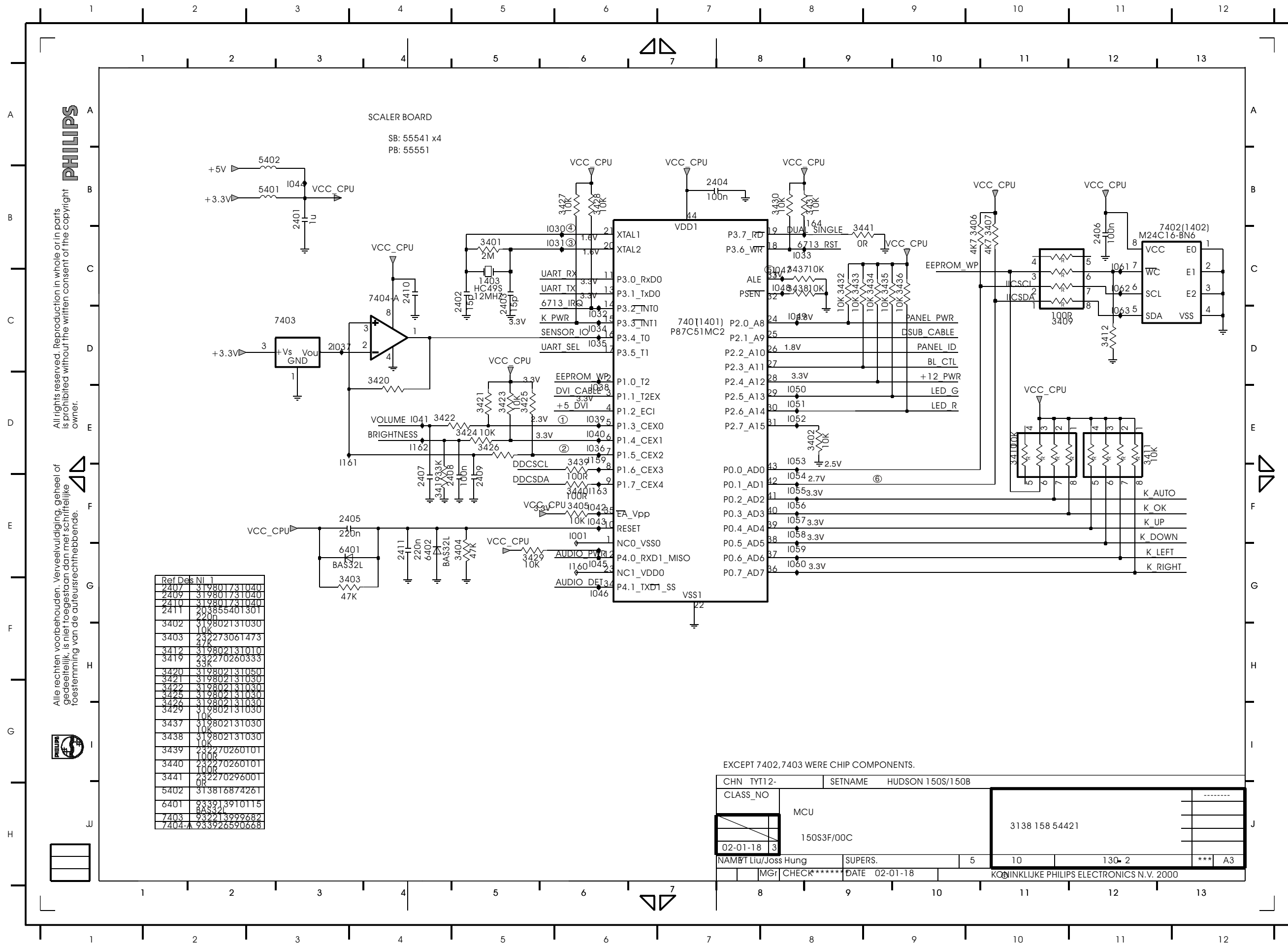


## Connector Diagram

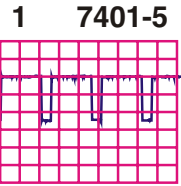




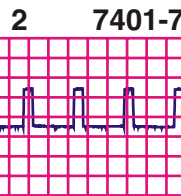
## Schematic diagram(MCU)



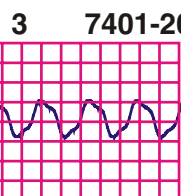
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2401 B3  
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2403 C5  
2404 B7  
2405 A4  
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2408 C5  
2409 E5  
2410 C4  
2411 E4  
2412 B4  
2402 D8  
2403 F4  
2404 E5  
2405 E6  
2406 B10  
2407 B5  
2409 C10  
2410 D10  
2411 D11  
2412 C11  
2419 A4  
2420 D4  
2421 D5  
2422 D5  
2423 D5  
2424 D5  
2425 D5  
2426 D5  
2427 B6  
2428 B6  
2429 E5  
2430 B8  
2431 B8  
2432 C8  
2433 C8  
2434 C9  
2435 C9  
2436 C9  
2437 C8  
2438 C8  
2439 D6  
2440 E6  
2441 B9  
24501 B3  
24502 B3  
24503 C3  
24504 E4  
24505 C2  
24506 C2  
7404-A-C4  
1001 E6  
1030 B6  
1031 B6  
1032 B6  
1033 B8  
1034 C6  
1035 C6  
1036 D6  
1037 D6  
1038 D6  
1039 D6  
1040 D6  
1041 D4  
1042 C6  
1043 E6  
1044 B3  
1045 E6  
1046 F6  
1047 B8  
1048 C8  
1049 C8  
1050 D8  
1051 D8  
1052 D8  
1053 D8  
1054 E8  
1055 E8  
1056 E8  
1057 E8  
1058 E8  
1059 E8  
1060 E8  
1061 C11  
1062 C11  
1063 C11  
1159 D6  
1160 E6  
1161 E6  
1162 D4  
1163 E6  
1164 B8



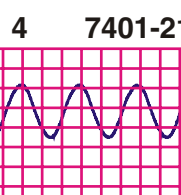
1 V/div AC  
50  $\mu$ S/div



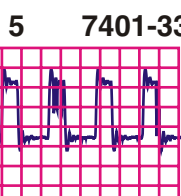
1 V/div AC  
50  $\mu$ S/div



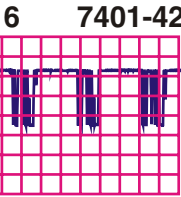
2 V/div AC  
0.2 mS/div



1 V/div AC  
0.2 mS/div



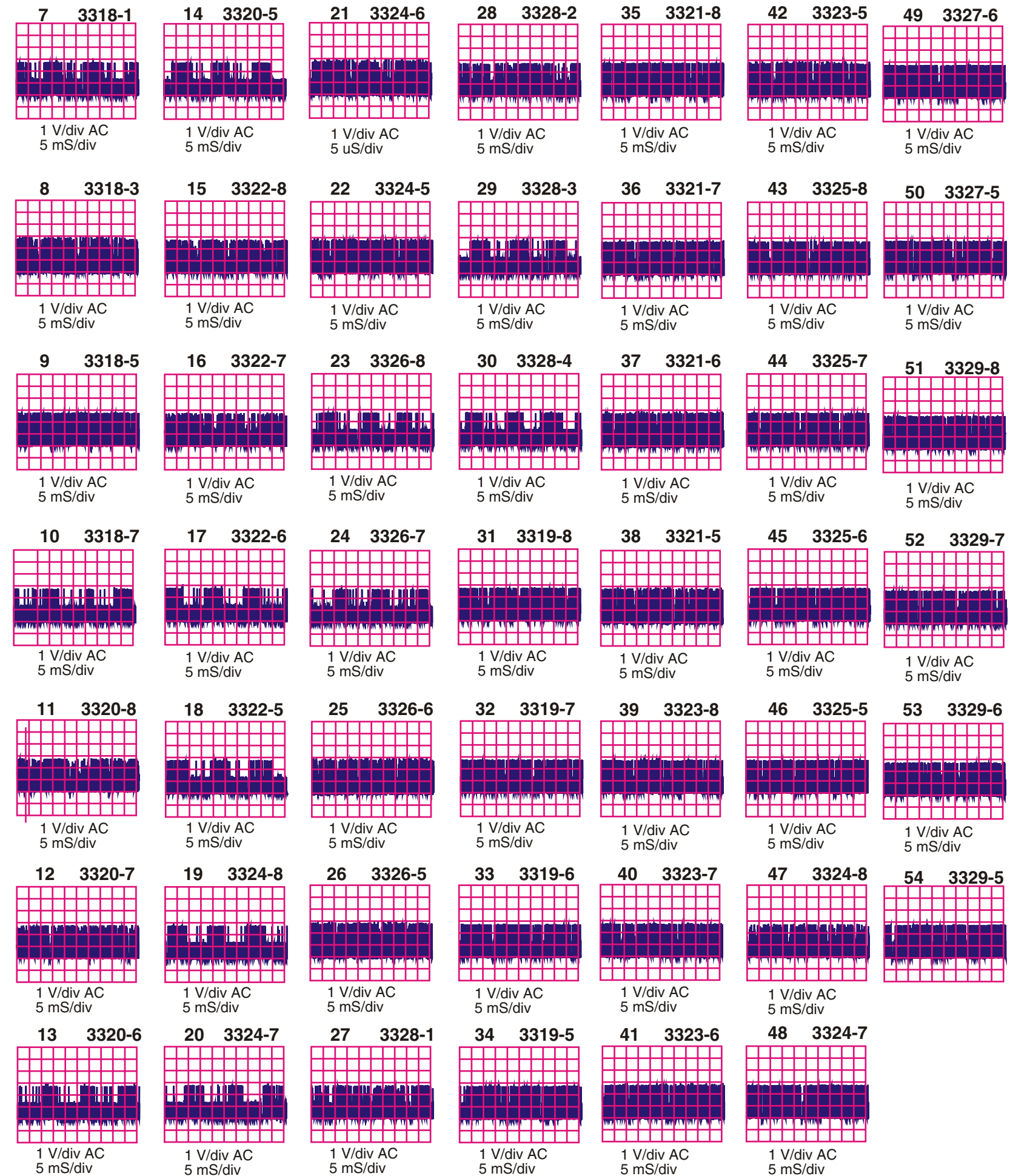
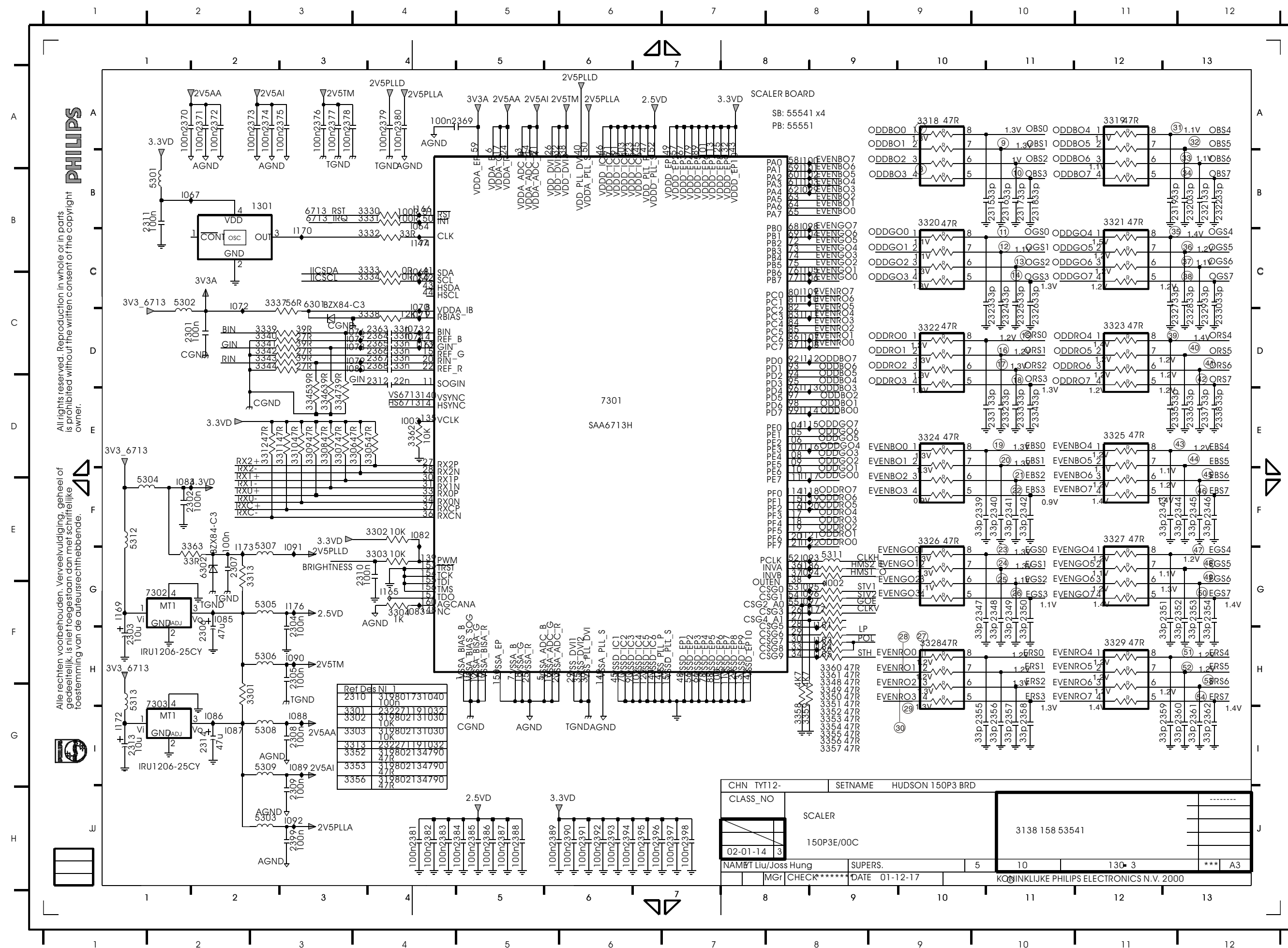
1 V/div AC  
0.5 mS/div



1 V/div AC  
0.5 mS/div

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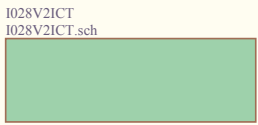
## Schematic diagram(Scaler)





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150P3A LCD 51

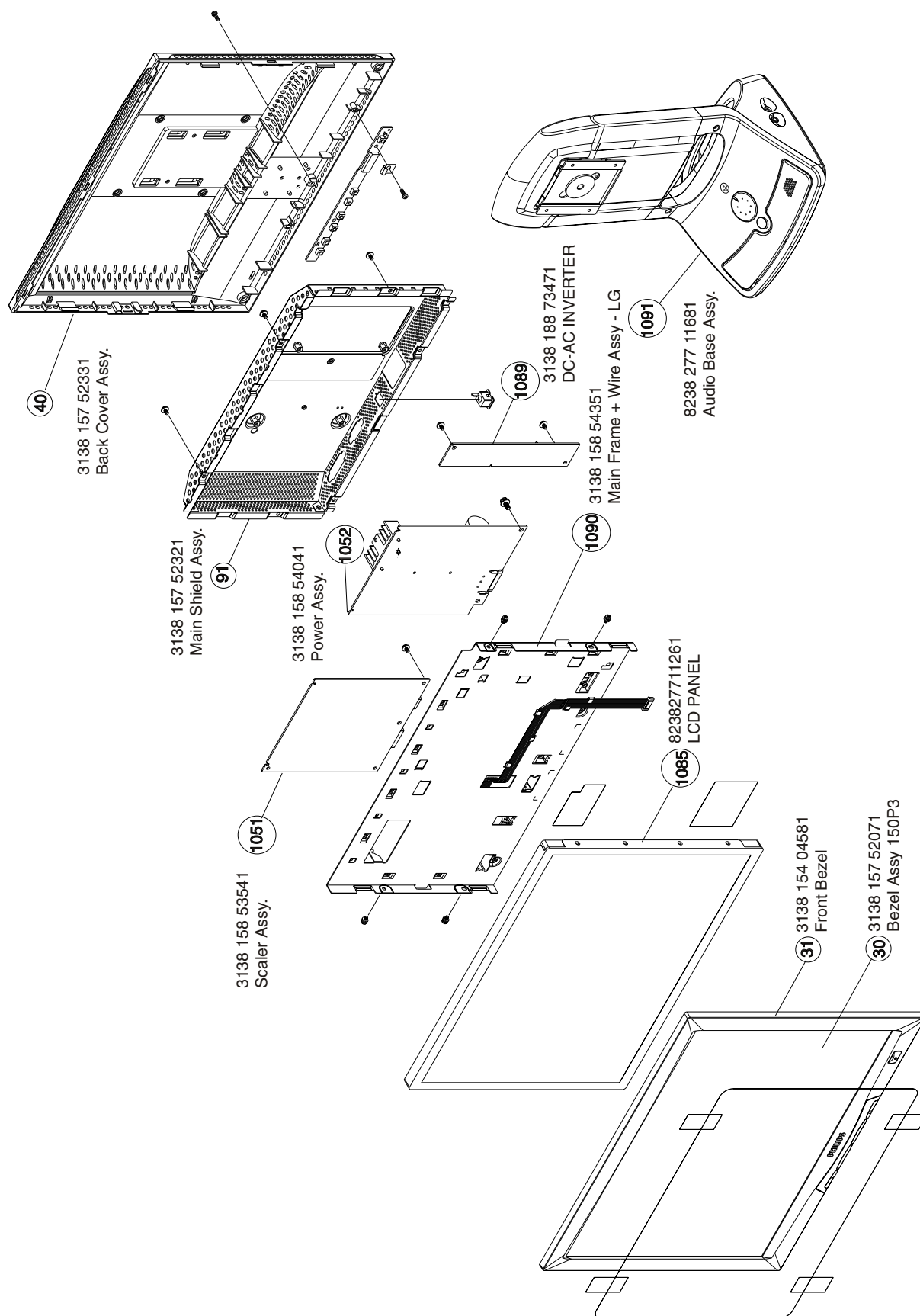


			<b>AMBIT</b>		Title	ꯀꯂ, ꯃꯆ
2	add R55,Q18	11/8/2001			Doc.No.	T50I028.00
1	modify	10/05/2001			PREPARED BY	
0	New release	08/13/2001	File Name	I028V2	REVIEWED BY	
REV.	DESCRIPTION	REL. DATE	SHEET	1 of 1	APPROVED BY	

## Exploded View

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## Exploded View 150P3A/00C



**Model: 150P3A/00C**

30	313815752071	BEZEL ASSY-150P3(T)
31	313815404581	BEZEL (T ABS-HB)
32	313815404611	BUTTON-POWER (S)
40	313815752331	BACK COVER ASSY-DUAL (T)
450	313815632051	CARTON-150P3A
451	313815632171	CUSHION-R-150P3A
452	313815632181	CUSHION-L-150P3A
453	313815620612	P.E. BAG-ANTI-STAT.
601	313811703981	E-D.F.U ASSY (150P3A)
1087	313816874231	MAINSCORD
1091	823827711681	AUDIO BASE ASSY
1089	313818873471	DC-AC INVERTER (T50I028.)
1051	313815853541	SCALER ASSY
1052	313815854041	POWER ASSY
1053	313815853561	CONTROL ASSY
1102	242208600266	FUSE 5X20 HT 2A 250V IEC B
6109	932214337687	DIO REC FCH20A15 (NIEC) L
7101	932213028682	IC L5991 (ST) L
7102	932215101687	FET POW STP6NC60FP (ST) L
7104	932214014667	OPT CP TCET1103(G) (VISH) L
7106	933771100686	IC TL431CLP S (MOTA) R
7301	935267865557	SCALER IC SAA6713H
7302	932218206685	IC SM IRU1206-25CY (INR0) R
7303	932218206685	IC SM IRU1206-25CY (INR0) R

**Recommended parts list of Inverter board :(T501028.00, Ambit)**

Pos.	Service code	Description	supplier code
=====			
1089	3138 188 73471	DC-AC INVERTER (T501028.00, Ambit)	
L1	9965 000 12389	COIL A00-0501 DIP(AXIS)	21.0043.10
F1	9965 000 12390	FUSE KE20 1206(DAITO)	26.7040.12
L2	9965 000 12391	IND SPC-1005P-354-SMD(TMP)	16.0490.01
Q18	9965 000 08856	TR NPN DTC144EUA UMT3 (ROHM)	06.0087.01
Q8	4822 130 11057	2N7002	06.0602.01
Q9	4822 130 11057	2N7002	06.0602.01
Q16	4822 130 11057	2N7002	06.0602.01
Q3	9965 000 06331	TR NPN 2SD1802T-TL DPAK/SANYO	06.0648.01
Q1	9965 000 08855	TR NPN MMBT3904LT1 SOT23(MOTOROL	06.0038.01
Q10	9965 000 12392	TR PNP MMBT3906LT1 SOT23(MOTOROL	06.0039.01
Q15	9965 000 12393	TR PNP DTA144EKA/T146(ROHM)	06.0033.03
Q2	9965 000 05480	SI3457DV	06.6031.01
Q11	9965 000 12394	PFET TP0610T SOT23(SILICONIX)	06.0501.01
Q17	9965 000 12394	PFET TP0610T SOT23(SILICONIX)	06.0501.01
U1	9965 000 12328	IC COMP LM393M SO8(NS)	04.0004.01
T1	9965 000 12395	XFMR SIT08133-1935 V:1(TMP)	22.0518.11
T2	9965 000 12395	XFMR SIT08133-1935 V:1(TMP)	22.0518.11

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## CTV :150P3A/00C

30	313815752071	BEZEL ASSY-150P3(T)	2508	202203100068	ELCAP GL 25V S 470U PM20 B	3210	319802131030	RST SM 0603	10K PM5 COL
31	313815404581	BEZEL (T ABS-HB)	2509	202203100068	ELCAP GL 25V S 470U PM20 B	3221	319802131030	RST SM 0603	10K PM5 COL
32	313815404611	BUTTON-POWER (S)	2510	223878615649	CER2 0603 X7R 16V 1N PM10 R	3222	319802131030	RST SM 0603	10K PM5 COL
33	313815404601	BUTTON-CONTROL (S)	2511	223878615649	CER2 0603 X7R 16V 1N PM10 R	3223	319802131010	RST SM 0603	1R PM5 COL
40	313815752331	BACK COVER ASSY-DUAL (T)	2512	223878615649	CER2 0603 X7R 16V 1N PM10 R	3224	319802131010	RST SM 0603	1R PM5 COL
41	313815404591	BACK COVER (T ABS-HB)	2513	223878615649	CER2 0603 X7R 16V 1N PM10 R	3225	319802131010	RST SM 0603	1R PM5 COL
96	313815402801	GUIDE - DC - OUT	2514	223878615649	CER2 0603 X7R 16V 1N PM10 R	3226	319802131010	RST SM 0603	1R PM5 COL
98	313815550733	PLASTIC COVER	2515	223858615623	CER2 0603 X7R 50V 1N PM10 R	3227	319802135620	RST SM 0603	5K6 PM5 COL
129	313810632613	PE BAG	2516	223858615623	CER2 0603 X7R 50V 1N PM10 R	3228	319802135620	RST SM 0603	5K6 PM5 COL
131	313815520601	PIVOT SETUP GUIDE -HUDSON	2517	223858615623	CER2 0603 X7R 50V 1N PM10 R	3230	319802190030	RST SM 0603 JUMP. 0R05 COL	
141	313815520961	QUICK SETUP GUIDE (150P3A)	2518	223858615623	CER2 0603 X7R 50V 1N PM10 R	3231	319802131010	RST SM 0603	1R PM5 COL
142	313815520595	MANUAL - USING YOUR MONITOR	2519	223858615623	CER2 0603 X7R 50V 1N PM10 R	3401	232270260205	RST SM 0603 RC21 2M PM5 R	
1051	313815853541	SCALER ASSY	2520	223858615623	CER2 0603 X7R 50V 1N PM10 R	3404	319802134730	RST SM 0603	47K PM5 COL
1052	313815854041	POWER ASSY	2521	223858615623	CER2 0603 X7R 50V 1N PM10 R	3405	319802131030	RST SM 0603	10K PM5 COL
1053	313815853561	CONTROL ASSY	2522	223858615623	CER2 0603 X7R 50V 1N PM10 R	3406	319802134720	RST SM 0603	4K7 PM5 COL
1061	823827711681	AUDIO BASE Assy	2523	223858615623	CER2 0603 X7R 50V 1N PM10 R	3407	319802134720	RST SM 0603	4K7 PM5 COL
1085	823827711261	TFT-LCD MOD LS150X03-A3	2524	223858615623	CER2 0603 X7R 50V 1N PM10 R	3409	235003510101	RST NETW SM ARV24 4X1R PM5 R	
1086	313818873511	FPC 1P/70/80P 0.635	2525	223858615623	CER2 0603 X7R 50V 1N PM10 R	3410	235003510103	RST NETW SM ARV24 4X 10K PM5 R	
1087	313816874231	MAINSCORD	2526	223858615623	CER2 0603 X7R 50V 1N PM10 R	3411	235003510103	RST NETW SM ARV24 4X 10K PM5 R	
1088	313818872731	CORD SUB-D 15/1M8/15 SUB-D M/M	2527	223858615623	CER2 0603 X7R 50V 1N PM10 R	3423	319802131030	RST SM 0603	10K PM5 COL
1089	313818873471	DC-AC INVERTER (T50I028.)	2528	223858615623	CER2 0603 X7R 50V 1N PM10 R	3424	319802131030	RST SM 0603	10K PM5 COL
1090	313815854351	MAIN FRAME+WIRE ASSY-LG	2529	223858615623	CER2 0603 X7R 50V 1N PM10 R	3427	319802131030	RST SM 0603	10K PM5 COL
1091	823827711681	AUDIO BASE ASSY	2530	223858615623	CER2 0603 X7R 50V 1N PM10 R	3428	319802131030	RST SM 0603	10K PM5 COL
1102	242208600266	FUSE 5X20 HPT 2A 250V IEC B	2531	223858615623	CER2 0603 X7R 50V 1N PM10 R	3430	319802131030	RST SM 0603	10K PM5 COL
1105	243803100404	CON BM SUPP H 1P F 16V 3A B	2532	223858615623	CER2 0603 X7R 50V 1N PM10 R	3431	319802131030	RST SM 0603	10K PM5 COL
1401	243803100437	SOC IC 44P 1.27 LCP	2533	223886715109	CER1 0603 NP0 50V 10P PM5 R	3432	319802131030	RST SM 0603	10K PM5 COL
1402	243803100146	SOC IC V 8P F 2.54 DIL B	2601	223858615636	CER2 0603 X7R 50V 10N PM10 R	3433	319802131030	RST SM 0603	10K PM5 COL
Various			2602	202001293723	ELCAP SM RV2 16V 47U PM20 R	3434	319802131030	RST SM 0603	10K PM5 COL
450	3138 15632461	Carton - 150P3A	2603	202001293778	ELCAP SM RV2 35V 10U PM20 R	3435	319802131030	RST SM 0603	10K PM5 COL
451	313815632171	CUSHION-R-150P3A	2604	223886115109	CER1 0805 NP0 50V 10P PM5 R	3436	319802131030	RST SM 0603	10K PM5 COL
452	313815632181	CUSHION-L-150P3A	2605	202001293778	ELCAP SM RV2 35V 10U PM20 R	3501	319802131010	RST SM 0603	1R PM5 COL
453	313815620612	P.E. BAG-ANTI-STAT.	2606	203803434111	ELCAP 1UF 25V	3502	319802131010	RST SM 0603	1R PM5 COL
601	313811703981	E-D.F.U ASSY (150P3A)	2608	222278019763	CER2 0805 Y5V 16V 1U PM20 R	3503	319802131010	RST SM 0603	1R PM5 COL
1052	313815854041	POWER ASSY	2610	202000190076	ELCAP SA 20V S 33U PM20 A	3504	319802131010	RST SM 0603	1R PM5 COL
2051	223891015649	CER2 0805 X7R 25V 1N PM10 R	2611	222291016647	CER2 0805 X7R 25V 68N PM10 R	3505	319802131010	RST SM 0603	1R PM5 COL
2052	223891015649	CER2 0805 X7R 25V 1N PM10 R	2613	222224119876	CER2 1206 Y5V 10V 10U P8020 R	3506	319802131010	RST SM 0603	1R PM5 COL
2056	223891015649	CER2 0805 X7R 25V 1N PM10 R	2614	223891015649	CER2 0805 X7R 25V 1N PM10 R	3507	319802131010	RST SM 0603	1R PM5 COL
2057	223891015649	CER2 0805 X7R 25V 1N PM10 R	2615	202001293778	ELCAP SM RV2 35V 10U PM20 R	3508	319802132210	RST SM 0603	220R PM5 COL
2101	203831000015	CAP MPP 275V S 220N PM10 B	2616	202001293778	ELCAP SM RV2 35V 10U PM20 R	3509	319802132210	RST SM 0603	220R PM5 COL
2102	203831000015	CAP MPP 275V S 220N PM10 B	2618	202002490534	ELCAP SM WX 50V 2U2 PM20 R	3510	319802190020	RST SM 0805 JUMP. 0R05 COLR	
2103	202055490139	CERSAF NSB 250V S 4N7 PM20 B	2622	203800650001	ELCAP BP NP 25V S 10U PM20 A	3516	319802131030	RST SM 0603	10K PM5 COL
2104	202055490139	CERSAF NSB 250V S 4N7 PM20 B	2623	223891015649	CER2 0805 X7R 25V 1N PM10 R	3517	319802131020	RST SM 0603	1K PM5 COL
2105	202203100077	ELCAP KM 450V S 82U PM20				3519	319802131030	RST SM 0603	10K PM5 COL
2106	223886115152	CER1 0805 NP0 50V 1N5 PM5 R	3051	319802151030	RST SM 0805 10K PM5 COL R	3520	319802131030	RST SM 0603	10K PM5 COL
2107	223891015649	CER2 0805 X7R 25V 1N PM10 R	3052	319802151010	RST SM 0805 1R PM5 COL R	3601	319802152290	RST SM 0805	22R PM5 COL R
2108	223858016623	CER2 0805 X7R 50V 4N7 PM10 R	3053	319802151010	RST SM 0805 1R PM5 COL R	3602	232273466492	RST SM 0805 RC12H 6K49 PM1 R	
2109	203855401206	CER1 0805 NP0 50V 27N PM10 R	3056	319802151010	RST SM 0805 1R PM5 COL R	3603	319802154730	RST SM 0805	47K PM5 COL R
2110	223886115221	CER2 0805 NP0 50V 220P PM5 R	3059	319802151030	RST SM 0805 10K PM5 COL R	3606	319802156830	RST SM 0805	68K PM5 COL R
2111	225260108026	CER2 DC X7R 1KV S 1N PM10 A	3101	212261200611	NTC DC SCK-164 S 16R PM15 B	3607	319802153330	RST SM 0805	33K PM5 COL R
2112	202055490158	CERSAF CD 250V S 2N2 PM20 B	3102	232271161274	RST SM 1206 RC01 270K PM5 R	3608	319802153330	RST SM 0805	33K PM5 COL R
2113	203803513506	ELCAP RGA 50V S 22U PM20 A	3103	232271161274	RST SM 1206 RC01 270K PM5 R	3609	232273461002	RST SM 0805 RC12H 1K PM1 R	
2114	223886115152	CER1 0805 NP0 50V 1N5 PM5 R	3105	232271161184	RST SM 1206 RC01 180K PM5 R	3610	213836500065	RTRM CER LIN 10K H RVM06HP0 B	
2115	225260108026	CER2 DC X7R 1KV S 1N PM10 A	3106	232273462703	RST SM 0805 RC12H 27K PM1 R	3612	232273061203	RST SM 0805 RC11 20K PM5 R	
2116	202203100053	ELCAP GL 25V S 470U PM20 A	3107	319802151030	RST SM 0805 10K PM5 COL R	3613	232273463301	RST SM 0805 RC12H 330R PM1 R	
2117	202203100053	ELCAP GL 25V S 470U PM20 A	3108	319802151030	RST SM 0805 10K PM5 COL R	3614	232273465102	RST SM 0805 RC12H 5K1 PM1 R	
2118	823827711631	CER2 SM Y5V 50V 1U PM8020	3109	319802151030	RST SM 0805 10K PM5 COL R	3615	319802152290	RST SM 0805	22R PM5 COL R
2119	223886115399	CER1 0805 NP0 50V 39P PM5 R	3110	232271161274	RST SM 1206 RC01 270K PM5 R	3616	232273462703	RST SM 0805 RC12H 27K PM1 R	
2120	223858016623	CER2 0805 X7R 50V 4N7 PM10 R	3112	213811613309	RST MFLM MFR-5S A 33R PM1 A	3617	232273464702	RST SM 0805 RC12H 4K7 PM1 R	
2122	225260108026	CER2 DC X7R 1KV S 1N PM10 A	3113	213811611302	RST MFLM MFR-5S A 1K3 PM1 A	3618	232273465102	RST SM 0805 RC12H 5K1 PM1 R	
2123	202203100053	ELCAP GL 25V S 470U PM20 A	3114	213811612204	RST MFLM MFR-5S A 220K PM1 A	3621	319802151030	RST SM 0805	10K PM5 COL R
2124	202203100053	ELCAP GL 25V S 470U PM20 A	3115	212010590722	RST MOX 1W RSS A 1R PM5 A	3622	319802152240	RST SM 0805	220K PM5 COL R
2209	223878615649	CER2 0603 X7R 16V 1N PM10 R	3116	232273462702	RST SM 0805 RC12H 2K7 PM1 R	3624	319802154730	RST SM 0805	47K PM5 COL R
2210	223878615649	CER2 0603 X7R 16V 1N PM10 R	3117	232271161109	RST SM 1206 RC01 10R PM5 R	3625	319802151040	RST SM 0805	1K PM5 COL R
2211	223886715331	CER1 0603 NP0 50V 330P PM5 R	3118	232273461503	RST SM 0805 RC12H 15K PM1 R	3627	319802154790	RST SM 0805	47R PM5 COL R
2212	223886715331	CER1 0603 NP0 50V 330P PM5 R	3119	232271161184	RST SM 1206 RC01 180K PM5 R	3629	319802151030	RST SM 0805	10K PM5 COL R
2214	223878615649	CER2 0603 X7R 16V 1N PM10 R	3120	232271161109	RST SM 1206 RC01 180K PM5 R	3631	319802190020	RST SM 0805 JUMP. 0R05 COLR	
2215	223878615649	CER2 0603 X7R 16V 1N PM10 R	3121	213811611184	RST MFLM MFR-5S A 10R PM1 A	3633	319802190020	RST SM 0805 JUMP. 0R05 COLR	
2216	223886715331	CER1 0603 NP0 50V 330P PM5 R	3122	213811611002	RST MFLM MFR-5S A 1K PM1 A	3634	212010592139	RST MOX 1W RSS S 270R PM5 B	
2217	223886715331	CER1 0603 NP0 50V 330P PM5 R	3123	232273061911	RST SM 0805 RC11 910R PM5 R	3635	319802131030	RST SM 0603	10K PM5 COL
2218	223886715339	CER1 0603 NP0 50V 33P PM5 R	3124	319802151020	RST SM 0805 1K PM5 COL R	3637	232273461803	RST SM 0805 RC12H 18K PM1 R	
2219	223886715221	CER1 0603 NP0 50V 220P PM5 R	3125	232273462703	RST SM 0805 RC12H 27K PM1 R	3640	319802154730	RST SM 0805	47K PM5 COL R
2220	223878615649	CER2 0603 X7R 16V 1N PM10 R	3126	232273462402	RST SM 0805 RC12H 2K4 PM1 R	3641	232273462702	RST SM 0805 RC12H 2K7 PM1 R	
2221	223878615649	CER2 0603 X7R 16V 1N PM10 R	3127	213811611005	RST MFLM MFR-5S A 1M PM1 A	3643	319802151030	RST SM 0805	10K PM5 COL R
2222	223878615649	CER2 0603 X7R 16V 1N PM10 R	3128	213811611005	RST MFLM MFR-5S A 1M PM1 A	3644	232273462202	RST SM 0805 RC12H 2K2 PM1 R	
2223	223878615649	CER2 0603 X7R 16V 1N PM10 R	3129	213811611004	RST MFLM MFR-5S A 1K PM1 A	3645	319802151030	RST SM 0805	10K PM5 COL R
2225	223878615649	CER2 0603 X7R 16V 1N PM10 R	3130	213811614708	RST MFLM MFR-5S A 4R7 PM1 A	3646	232273463302	RST SM 0805 RC12H 3K3 PM1 R	
2226	223878615649	CER2 0603 X7R 16V 1N PM10 R	3134	232271161184	RST SM 1206 RC01 180K PM5 R	3647	232273461503	RST SM 0805 RC12H 15K PM1 R	
2401	222278019763	CER2 0805 Y5V 16V 1U PM20 R	3135	212266200101	PTC DC 1A85 30V S 0R045 PM30 A	3648	319802131030	RST SM 0603	10K PM5 COL
2402	223886715159	CER1 0603 NP0 50V 15P PM5 R	3136	232271161101	RST SM 1206 RC01 1R PM5 R	3650	319802190020	RST SM 0805 JUMP. 0R05 COLR	
2403	223886715159	CER1 0603 NP0 50V 15P PM5 R	3137	213811611002	RST MFLM MFR-5S A 1K PM1 A				
2404	223878615649	CER2 0603 X7R 16V 1N PM10 R	3138	213811613908	RST MFLM MFR-5S A 3R9 PM1 A	5101	313818870151	LINE FILTER 9MH	
2405	223858019814	CER2 0805 Y5V 50V 220N P8020 R	3190	319802190020	RST SM 0805 JUMP. 0R05 COL				



# Spare Parts List

150P3A LCD

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6106	933703700133	DIO REC BYV26E	A (PHSE) A
6107	933952580685	DIO SIG SM BAV103	(TEG0) R
6108	933952580685	DIO SIG SM BAV103	(TEG0) R
6109	932214337687	DIO REC FCH20A15	(NIEC) L
6110	932216647682	DIO REC SB340-F5	(PAIJ) B
6221	933913910115	DIO SIG SM BAS32L	(PHSE) R
6222	932217973668	DIO REC SM BAT42W	(PAIJ) R
6301	933516940215	DIO REG SM BZX84-C3V0	(PHSE) R
6302	933770290215	DIO REG SM BZX84-B2V7	(PHSE) R
6402	933913910115	DIO SIG SM BAS32L	(PHSE) R
6601	932216668668	DIO REC SM SS14	(PAIJ) R
6603	932216668668	DIO REC SM SS14	(PAIJ) R
6604	932216668668	DIO REC SM SS14	(PAIJ) R
6605	932216668668	DIO REC SM SS14	(PAIJ) R
7052	933967310685	TRA SIG SM BC848C	(ONSE) R
7101	932213028682	IC L5991	(ST) L
7102	932215101687	FET POW STP6NC60FP	(ST) L
7104	932214014667	OPT CP TCET1103(G)	(VISH) L
7106	933771100686	IC TL431CLP	S (MOTA) R
7202	932214526668	IC SM M24C02-WMN6	(ST) R
7203	932214526668	IC SM M24C02-WMN6	(ST) R
7206	935260739118	IC SM 74LVC14APW	(PHSE) R
7208	933714830653	IC SM 74HC4052D	(PHSE) R
7401	935271000512	IC SM P87C51MC2BA/01	(PHSE) L
7402	932214725682	IC M24C16-WBN6	(ST) L
7501	933967380685	TRA SIG SM BC858C	(ONSE) R
7502	933967380685	TRA SIG SM BC858C	(ONSE) R
7601	932217173668	IC SM LM2594M-ADJ	(NSC0) R
7603	933967310685	TRA SIG SM BC848C	(ONSE) R
7604	932212353668	IC SM TL431ACD	S (ST) R
7605	932212353668	IC SM TL431ACD	S (ST) R
7609	933967310685	TRA SIG SM BC848C	(ONSE) R
7610	933967380685	TRA SIG SM BC858C	(ONSE) R
7611	932217311668	IC SM LF353M	(NSC0) R
7614	932209265685	TRA SIG SM MUN2211J	(ONSE) R
7615	932216638668	FET POW SM SI5441DC	(VISH) R
7616	932209265685	TRA SIG SM MUN2211J	(ONSE) R
7617	933967380685	TRA SIG SM BC858C	(ONSE) R
7619	932209265685	TRA SIG SM MUN2211J	(ONSE) R
1051	SCALER ASSY		
1101	313818872851	CBLE MAINS 3P/70/FHOOK	
1102	242208600266	FUSE SX20 HT 2A	250V IEC B
1105	243803100404	CON BM SUPP H 1P F 16V 3A B	
1301	823827711061	OSC XTL 25MHZ 15PF	
2301	223878615649	CER2 0603 X7R 16V	1N PM10 R
2302	223878615649	CER2 0603 X7R 16V	1N PM10 R
2303	202001293721	ELCAP SM RV2	16V 10U PM20 R
2304	223878615649	CER2 0603 X7R 16V	1N PM10 R
2305	223878615649	CER2 0603 X7R 16V	1N PM10 R
2306	202001293723	ELCAP SM RV2	16V 47U PM20 R
2307	223878615649	CER2 0603 X7R 16V	1N PM10 R
2308	223878615649	CER2 0603 X7R 16V	1N PM10 R
2309	223878615649	CER2 0603 X7R 16V	1N PM10 R
2311	223878615649	CER2 0603 X7R 16V	1N PM10 R
2312	223878616641	CER2 0603 X7R 16V	22N PM10 R
2313	202001293721	ELCAP SM RV2	16V 10U PM20 R
2314	202001293723	ELCAP SM RV2	16V 47U PM20 R
2315	223886715339	CER1 0603 NP0 50V	33P PM5 R
2316	223886715339	CER1 0603 NP0 50V	33P PM5 R
2317	223886715339	CER1 0603 NP0 50V	33P PM5 R
2318	223886715339	CER1 0603 NP0 50V	33P PM5 R
2319	223886715339	CER1 0603 NP0 50V	33P PM5 R
2320	223886715339	CER1 0603 NP0 50V	33P PM5 R
2321	223886715339	CER1 0603 NP0 50V	33P PM5 R
2322	223886715339	CER1 0603 NP0 50V	33P PM5 R
2323	223886715339	CER1 0603 NP0 50V	33P PM5 R
2324	223886715339	CER1 0603 NP0 50V	33P PM5 R
2325	223886715339	CER1 0603 NP0 50V	33P PM5 R
2326	223886715339	CER1 0603 NP0 50V	33P PM5 R
2327	223886715339	CER1 0603 NP0 50V	33P PM5 R
2328	223886715339	CER1 0603 NP0 50V	33P PM5 R
2329	223886715339	CER1 0603 NP0 50V	33P PM5 R
2330	223886715339	CER1 0603 NP0 50V	33P PM5 R
2331	223886715339	CER1 0603 NP0 50V	33P PM5 R
2332	223886715339	CER1 0603 NP0 50V	33P PM5 R
2333	223886715339	CER1 0603 NP0 50V	33P PM5 R
2334	223886715339	CER1 0603 NP0 50V	33P PM5 R
2335	223886715339	CER1 0603 NP0 50V	33P PM5 R
2336	223886715339	CER1 0603 NP0 50V	33P PM5 R
2337	223886715339	CER1 0603 NP0 50V	33P PM5 R
2338	223886715339	CER1 0603 NP0 50V	33P PM5 R
2339	223886715339	CER1 0603 NP0 50V	33P PM5 R
2340	223886715339	CER1 0603 NP0 50V	33P PM5 R
2341	223886715339	CER1 0603 NP0 50V	33P PM5 R
2342	223886715339	CER1 0603 NP0 50V	33P PM5 R
2343	223886715339	CER1 0603 NP0 50V	33P PM5 R
2344	223886715339	CER1 0603 NP0 50V	33P PM5 R
2345	223886715339	CER1 0603 NP0 50V	33P PM5 R
2346	223886715339	CER1 0603 NP0 50V	33P PM5 R
2347	223886715339	CER1 0603 NP0 50V	33P PM5 R
2348	223886715339	CER1 0603 NP0 50V	33P PM5 R
2349	223886715339	CER1 0603 NP0 50V	33P PM5 R
2350	223886715339	CER1 0603 NP0 50V	33P PM5 R
2351	223886715339	CER1 0603 NP0 50V	33P PM5 R
2352	223886715339	CER1 0603 NP0 50V	33P PM5 R
2353	223886715339	CER1 0603 NP0 50V	33P PM5 R
2354	223886715339	CER1 0603 NP0 50V	33P PM5 R
2355	223886715339	CER1 0603 NP0 50V	33P PM5 R
2356	223886715339	CER1 0603 NP0 50V	33P PM5 R
2357	223886715339	CER1 0603 NP0 50V	33P PM5 R
2358	223886715339	CER1 0603 NP0 50V	33P PM5 R
2359	223886715339	CER1 0603 NP0 50V	33P PM5 R
2360	223886715339	CER1 0603 NP0 50V	33P PM5 R
2361	223886715339	CER1 0603 NP0 50V	33P PM5 R
2362	223886715339	CER1 0603 NP0 50V	33P PM5 R
2363	223878616643	CER2 0603 X7R 16V	33N PM10 R
2364	223878616643	CER2 0603 X7R 16V	33N PM10 R
2365	223878616643	CER2 0603 X7R 16V	33N PM10 R
2366	223878616643	CER2 0603 X7R 16V	33N PM10 R
2367	223878616643	CER2 0603 X7R 16V	33N PM10 R
2368	223878616643	CER2 0603 X7R 16V	33N PM10 R
2369	223878615649	CER2 0603 X7R 16V	1N PM10 R
2370	223878615649	CER2 0603 X7R 16V	1N PM10 R
2371	223878615649	CER2 0603 X7R 16V	1N PM10 R
2372	223878615649	CER2 0603 X7R 16V	1N PM10 R
2373	223878615649	CER2 0603 X7R 16V	1N PM10 R
2374	223878615649	CER2 0603 X7R 16V	1N PM10 R
2375	223878615649	CER2 0603 X7R 16V	1N PM10 R
2376	223878615649	CER2 0603 X7R 16V	1N PM10 R
2377	223878615649	CER2 0603 X7R 16V	1N PM10 R
2378	223878615649	CER2 0603 X7R 16V	1N PM10 R
2379	223878615649	CER2 0603 X7R 16V	1N PM10 R
2380	223878615649	CER2 0603 X7R 16V	1N PM10 R
2381	223878615649	CER2 0603 X7R 16V	1N PM10 R
2382	223878615649	CER2 0603 X7R 16V	1N PM10 R
2383	223878615649	CER2 0603 X7R 16V	1N PM10 R
2384	223878615649	CER2 0603 X7R 16V	1N PM10 R
2385	223878615649	CER2 0603 X7R 16V	1N PM10 R
2386	223878615649	CER2 0603 X7R 16V	1N PM10 R
2387	223878615649	CER2 0603 X7R 16V	1N PM10 R
2388	223878615649	CER2 0603 X7R 16V	1N PM10 R
2389	223878615649	CER2 0603 X7R 16V	1N PM10 R
2390	223878615649	CER2 0603 X7R 16V	1N PM10 R
2391	223878615649	CER2 0603 X7R 16V	1N PM10 R
2392	223878615649	CER2 0603 X7R 16V	1N PM10 R
2393	223878615649	CER2 0603 X7R 16V	1N PM10 R
2394	223878615649	CER2 0603 X7R 16V	1N PM10 R
2395	223878615649	CER2 0603 X7R 16V	1N PM10 R
2396	223878615649	CER2 0603 X7R 16V	1N PM10 R
2397	223878615649	CER2 0603 X7R 16V	1N PM10 R
2398	223878615649	CER2 0603 X7R 16V	1N PM10 R
2399	223878615649	CER2 0603 X7R 16V	1N PM10 R
3304	319802131020	RST SM 0603	1K PM5 COL
3305	319802134790	RST SM 0603	47R PM5 COL
3306	319802134790	RST SM 0603	47R PM5 COL
3307	319802134790	RST SM 0603	47R PM5 COL
3308	319802134790	RST SM 0603	47R PM5 COL
3309	319802134790	RST SM 0603	47R PM5 COL
3310	319802134790	RST SM 0603	47R PM5 COL
3311	319802134790	RST SM 0603	47R PM5 COL
3312	319802134790	RST SM 0603	47R PM5 COL
3318	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3319	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3320	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3321	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3322	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3323	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3324	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3325	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3326	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3327	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3328	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3329	235003510479	RST NETW SM ARV24 4X	47R PM5 R
3330	319802131010	RST SM 0603	1R PM5 COL
3331	319802131010	RST SM 0603	1R PM5 COL
3332	319802133390	RST SM 0603	33R PM5 COL
3333	319802190030	RST SM 0603 JUMP.	0R05 COL
3334	319802190030	RST SM 0603 JUMP.	0R05 COL
3337	232270260569	RST SM 0603 RC21	56R PM5 R
3338	319802131230	RST SM 0603	12K PM5 COL
3339	232270403749	RST SM 0603 RC22H	37R4 PM1 R
3340	232270462709	RST SM 0603 RC22H	27R PM1 R
3341	232270403749	RST SM 0603 RC22H	37R4 PM1 R
3342	232270462709	RST SM 0603 RC22H	27R PM1 R
3343	232270403749	RST SM 0603 RC22H	37R4 PM1 R
3344	232270462709	RST SM 0603 RC22H	27R PM1 R
3345	232270403749	RST SM 0603 RC22H	37R4 PM1 R
3346	232270403749	RST SM 0603 RC22H	37R4 PM1 R
3347	232270403749	RST SM 0603 RC22H	37R4 PM1 R
3348	319802134790	RST SM 0603	47R PM5 COL
3349	319802134790	RST SM 0603	47R PM5 COL
3350	319802134790	RST SM 0603	47R PM5 COL
3351	319802134790	RST SM 0603	47R PM5 COL
3354	319802134790	RST SM 0603	47R PM5 COL
3355	319802134790	RST SM 0603	47R PM5 COL
3357	319802134790	RST SM 0603	47R PM5 COL
3358	319802134720	RST SM 0603	4K7 PM5 COL
3359	319802134720	RST SM 0603	4K7 PM5 COL
3360	319802134790	RST SM 0603	47R PM5 COL
3361	319802134790	RST SM 0603	47R PM5 COL
3362	319802131030	RST SM 0603	10K PM5 COL
3363	319802153390	RST SM 0805	33R PM5 COL R
5301	313816874261	TI321611G8-SMD	
5302	313816874261	TI321611G8-SMD	
5303	313816874261	TI321611G8-SMD	
5304	313816874261	TI321611G8-SMD	
5305	313816874261	TI321611G8-SMD	
5306	313816874261	TI321611G8-SMD	
5307	313816874261	TI321611G8-SMD	
5308	313816874261	TI321611G8-SMD	
5309	313816874261	TI321611G8-SMD	
5311	242254944195	IND FXD 0805 EMI 1MHZ 220R R	
5312	313816874261	TI321611G8-SMD	
5313	313816874261	TI321611G8-SMD	
6301	933516940215	DIO REG SM BZX84-C3V0	(PHSE) R
6302	933770290215	DIO REG SM BZX84-B2V7	(PHSE) R
7301	935267865557	SCALER IC SAA6713H	
7302	932218206685	IC SM IRU1206-25CY	(INR0) R
7303	932218206685	IC SM IRU1206-25CY	(INR0) R
1053	CONTROL ASSY		
1701	24		



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PHILIPS - 150P3A  
GENERAL PRODUCT  
SPECIFICATION

- . ANALOG AND DIGITAL DUAL INPUT
- . AUTO PICTURE ADJUSTMENT
- . 14 FACTORY PRESET MODES AND 15 USER MODES WHICH CAN BE RECOVERED TO PRESET MODES
- . USER FRIENDLY OSD DISPLAY FOR MODE IDENTIFICATION /ADJUSTMENT
- . DDC2B COMMUNICATION CAPABILITY
- . MAX. RESOLUTION 1024 x 768 NON-INTERLACED AT 75 HZ
- . 15 COLOR TFT LCD FLAT PANEL
- . EASY TILT & SWIVEL BASE
- . FULL RANGE POWER SUPPLY 90 264 VAC
- . CE ENVIRONMENTAL POLICY
- . ANTI-GLARE TO REDUCE LIGHT REFLECTION
- . POWER MANAGEMENT CAPABILITY
- . SOG SYNC SUPPORT
- . AUDIO FUNCTION
- . TCO 99
- . PROVIDE USB HUB (Option)
- . WALL MOUNT KIT (Option)
- . PROTECTIVE COVER (Option)

CLASS NO.		15" TFT XGA LCD CMTR-150P3A		8639 000 11789	
1-4-02		TYPE : 150P3A/00C			
		BRAND : PHILIPS			
NAME	Y C Liu	SUPERS.	17	590	— 1
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CLASS NO.

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## 1.0 FOREWORD

This specification describes a 15" XGA multi-scan color TFT LCD monitor with maximum resolution up to 1024x768/75Hz non-interlaced.

## 2.0 PRODUCT PROFILE

HUDSON 15" TFT LCD flat panel monitor  
Analog and digital interface  
Integrated tilt, swivel and pivot base

## 2.1 LCD

Type NR. : LG panel LS150X03-A3  
Dimensions : 326.0(H)\*254.0(V)\*11.5(D) mm  
Pitch (mm) : 0.297 x 0.297 mm  
Color pixel arrangement : RGB stripe arrangement  
Display surface : Antiglare with hard coating (3H)  
Number of color : 6 bits, 16,777,216 colors  
Backlight : CCFL edge-light system  
Active area (W x H) : 304.1 x 228.1 mm (15.0" Diagonal)  
Viewing angle (CR<sub>i</sub> @ 10°) : Vertical 90° 95 degree, Horizontal 120° 115 degree typical.  
Contrast ratio : 350 typical.  
Luminance of white : 250/200 Nits typical  
Type NR. : CPT panel CLAA150XG02  
Dimensions : 326.0(H)\*252.0(V)\*11.0(D) mm  
Pitch (mm) : 0.297 x 0.297 mm  
Color pixel arrangement : RGB stripe arrangement  
Display surface : Antiglare with hard coating (3H)  
Number of color : 8 bits, 16,777,216 colors  
Backlight : CCFL edge-light system  
Active area (W x H) : 304.1 x 228.1 mm (15.0" Diagonal)  
Viewing angle (CR<sub>i</sub> @ 10°) : Vertical 100° 95 degree, Horizontal 120° 115 degree typical.  
Contrast ratio : 350 typical.  
Luminance of white : 250/200 Nits typical

## 2.2 Scanning frequencies

Hor.: 30-61 KHz  
Ver.: 56-76 Hz

## 2.3 Video dot rate

: < 79 MHz

## 2.4 Power input

: 90-264 Vac, 50/60 +/- 3 Hz

## 2.5 Power consumption

: < 23.27 W typ.  
: AC input power < 2W when the DC switch is off.

## 2.6 Dimensions

: 386W 343W x 399H x 165/180D (Incl. Pedestal)

## 2.7 Weight

: 4.70 Kg

## 2.8 Function:

- (1) D-shell
- Analog R/G/B separate inputs,
- H/V sync separated,
- Composite (H+V) TTL level,
- SOG sync
- (2) DVI digital Panel Link TMDS input
- (3) USB HUB (option)

CLASS NO.

15" TFT XGA LCD CMTR-150P3A

TYPE : 150P3A/00C

BRAND : PHILIPS

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2.9 Ambient temperature: 5-40 degree C

2.10 Safety and EMI requirements

Safety requirement: CCIB/CCEE (China), CE (Europe), CSA (Canada), IEC60950 CB Report, NOMNYCE (Mexico), PSB (Singapore), SEMKO (Nordic), TUV (Germany), UL (USA) GOST (Russia), B-MARK (Poland), DEMKO (Nordic), FIMKO (Nordic), SISIR, CPA (Singapore), EZU (Czech)

EMI requirement: BSMI (Taiwan), C-tick (Australia), CE (Europe), FCC (USA), IC (Canada), VCCI (Japan)

Ergonomic Requirement: ISO13406-2, TUV/GS TCO99, MPRII (Sweden), Nutek (Sweden)

Power management: EPA, Nutek, E2000.

Environmental & Low Emission: MPRII, TCO99

3.0 Electrical characteristics

Compatibility: PC2001, Windows 2000, Windows98/Me, Windows XP, NSTL

3.1 Interface signals

3.1.1 Input signal can be applied in two different modes:

1). D-shell Analog

Input signal: Video, H-sync, V-sync  
Video: 0.7 Vp-p, input impedance, 75 ohm  
Sync. : Separate sync TTL level. Input impedance 5k6ohm  
Hor. Sync Positive/Negative  
Ver. Sync Positive/Negative

2). Intel DVI Digital

Input signal: Single channel TMDS signal

3.1.2 Interface Cable

1) DVI connector

Pin-assignment:

Pin No.	Description
1	TMDS data2-
2	TMDS data2+
3	TMDS data2 shield
4	NC
5	NC
6	DDC clock
7	DDC data
8	NC
9	TMDS data1-
10	TMDS data1+
11	TMDS data1 shield
12	NC
13	NC
14	+5V
15	Ground (return for +5V and H/V sync)
16	Hot plug detect
17	TMDS data0-
18	TMDS data0+
19	TMDS data0 shield
20	NC
21	NC
22	TMDS clock shield
23	TMDS clock+
24	TMDS clock-

CLASS NO.

15" TFT XGA LCD CMTR-150P3A

TYPE : 150P3A/00C

BRAND : PHILIPS

8639 000 11789

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2) D-Sub Cable

Pin-assignment:

PIN No.	SIGNAL
1	Red
2	Green/ <u>SOG</u>
3	Blue
4	Sense (GND)
5	Test (GND)
6	Red GND
7	Green GND
8	Blue GND
9	+5V
10	Sync GND
11	Sense (GND)
12	Serial data (SDA)
13	H/H+V sync
14	V-sync
15	Data clock (SCL)

## 3.1.3 Software control functions via OSD/control

## 1) Analog interface OSD:

Adjustable functions:

MAIN CONTROLS
LANGUAGE
ADJUST POSITION
BRIGHTNESS & CONTRAST
VIDEO NOISE
ADJUST COLOR
OSD SETTINGS
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN <input type="checkbox"/>

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## GENERAL PRODUCT SPECIFICATION

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LANGUAGE:	ENGLISH, ESPANOL, FRANCAIS, DEUTSCH, ITALIANO, JAPANESE, CHINESE
ADJUST POSITION:	HORIZONTAL VERTICAL
BRIGHTNESS & CONTRAST:	Brightness and Contrast adjustment.
VIDEO NOISE:	Phase adjustment, Clock adjustment
ADJUST COLOR:	Original panel color, 9300K for general use, 6500k for image management, User red green blue adjustable
OSD POSITION:	OSD H-position, OSD V-position
PRODUCT INFORMATION:	show the product information
RESET TO FACTORY SETTING:	recall return to Factory preset timings and settings.
INPUT SELECTION:	select digital or analog input

2) Digital interface OSD:  
Adjustable functions:

MAIN CONTROLS
LANGUAGE
BRIGHTNESS & CONTRAST
ADJUST COLOR
OSD SETTNCS
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN 

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1-4-02		TYPE : 150P3A/00C BRAND : PHILIPS			
NAME	Y C Liu	SUPERS.	17	590	— 7 10 A4
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LANGUAGE: ENGLISH, ESPANOL, FRANCAIS, DEUTSCH, ITALIANO, JAPANESE, CHINESE

BRIGHTNESS & CONTRAST: Brightness and Contrast adjustment.

ADJUST COLOR: Original panel color,  
9300K for general use,  
6500k for image management,  
User red green blue adjustable

OSD POSITION: OSD H-position, OSD V-position

PRODUCT INFORMATION: show product information  
RESET TO FACTORY SETTING : recall return to Factory preset timings and settings.

INPUT SELECTION: select digital or analog input

### 3.2 Audio base function

#### 3.2.1 Audio

Input Signal levels: 500mVrms  
Headphone output signal level: 32 ohm 0.5 ~ 0.7 Vrms  
Input signal connector: 3.5mm mini jack  
Loudspeakers: 2 + 2W stereo firing

#### 3.2.2 Microphone

Sensitivity: -65 +/- 5 dB re 1V/uBar at 1kHz  
Output impedance: 600 ohm typical

### 3.3 Timing requirement

#### 3.3.1 Mode storing capacity

(1) Factory preset modes : 140  
(2) User modes : 15

#### 3.3.2 Factory preset timings

MODE NO.	1	2	3	4
RESOLUTION	640 x 350	720 x 400	640 x 480	640x480
Dot clock (MHz)	25.175	28.321	25.175	30.240
f h	31.469kHz	31.469kHz	31.469kHz	35.0kHz
A ( us )	31.78 (800 dots)	31.78 (900dots)	31.778 (800 dots)	28.571 (864 dots)
B ( us )	3.813 (96 dots)	3.813 (108dots)	3.813 (96 dots)	2.116 (64 dots)
C ( us )	1.907 (48 dots)	1.907 (54dots)	1.907 (48 dots)	3.175 (96 dots)
D ( us )	25.42 (640 dots)	25.42 (720dots)	25.422 (640 dots)	21.164 (640 dots)
E ( us )	0.636 (16 dots)	0.636 (18dots)	0.636 (16 dots)	2.116 (64 dots)
f v	70Hz (70.09)	70Hz (70.087)	60Hz (59.940)	66.7 Hz (66.667)
O ( ms )	14.27 (449 lines)	14.27 (449 lines)	16.683 (525 lines)	15.000 (525 lines)
P ( ms )	0.064 (2 lines)	0.064 (2 lines)	0.064 (2 lines)	0.086 (3 lines)
Q ( ms )	1.907 (60 lines)	1.112 (35 lines)	1.049 (33 lines)	1.114 (39 lines)
R ( ms )	11.12 (350 lines)	12.71 (400 lines)	15.253 (480 lines)	13.714 (480 lines)
S ( ms )	1.179 (37 lines)	0.384 (12 lines)	0.317 (10 lines)	0.086 (3 lines)
SYNC. H/V	+/-	-/+	- / -	+/-
POLARITY				Or -/-
SEP SYNC	Y	Y	Y	Y

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TYPE : 150P3A/00C

BRAND : PHILIPS

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A	: H-Total	O	: V-Total
B	: H- Sync width	P	: V- Sync width
C	: H- Back porch	Q	: V- Back porch
D	: H- Video width	R	: V- Video width
E	: H- Front porch	S	: V- Front porch

MODE NO.	5	6	7	8
RESOLUTION	640 x 480	640 x 480	800 x 600	800 x 600
Dot clock(MHz)	31.500	31.500	36.000	40.000
f h	37.861kHz	37.500kHz	35.156kHz	37.879kHz
A ( us )	26.413(832 dots)	26.667 (840 dots)	28.44 (1024 dots)	26.40 (1056 dots)
B ( us )	1.270(40 dots)	2.032 ( 64 dots)	2.000 ( 72 dots)	3.200 ( 128 dots)
C ( us )	4.064(128 dots)	3.810 ( 120 dots)	3.556 ( 128 dots)	2.200 ( 88 dots)
D ( us )	20.317(640 dots)	20.317 ( 640 dots)	22.22 ( 800 dots)	20.00 ( 800 dots)
E ( us )	0.762(24 dots)	0.508 ( 16 dots)	0.667 ( 24 dots)	1.000 ( 40 dots)
f v	72.809Hz	75Hz (75 )	56Hz (56.25 )	60Hz ( 60.316)
O (ms)	13.735(520 lines)	13.333 (500 lines)	17.78 (625 lines)	16.58 (628 lines)
P ( ms )	0.079(3 lines)	0.080 ( 3 lines)	0.057 ( 2 lines)	0.106 ( 4 lines)
Q (ms)	0.739(28 lines)	0.427 ( 16 lines)	0.626 ( 22 lines)	0.607 ( 23 lines)
R ( ms )	12.678(480 lines)	12.80 (480 lines)	17.07 (600 lines)	15.84 (600 lines)
S ( ms )	0.237(9 lines)	0.027 ( 1 line )	0.028 ( 1 line )	0.026 ( 1 line )
SYNC. H/V	-/-	- / -	+ / +	+ / +
POLARITY				
SEP SYNC	Y	Y	Y	Y

MODE NO.	9	10	11	12
RESOLUTION	800 x 600	800 x 600	832 x 624	1024 x 768
Dot clock (MHz)	50.000	49.500	57.280	65.000
f h	48.077kHz	46.875kHz	49.722kHz	48.363kHz
A ( us )	20.80 (1040dots)	21.333 (1056dots)	20.11 (1152dots)	20.677(1344 dots)
B ( us )	2.400 ( 120 dots)	1.616 ( 80 dots)	1.117 ( 64 dots)	2.092(136 dots)
C ( us )	1.280 ( 64 dots)	3.232 ( 160 dots)	3.911 ( 224 dots)	2.462(160 dots)
D ( us )	16.00 ( 800 dots)	16.162 ( 800 dots)	14.52 ( 832 dots)	15.754(1024 dots)
E ( us )	1.120 ( 56 dots)	0.323 ( 16 dots)	0.559 ( 32 dots)	0.369(24 dots)
f v	72Hz ( 72.188)	75Hz ( 75.000)	75Hz ( 74.546)	60.004Hz
O (ms)	13.85 (666 lines)	13.333 (625lines)	13.41 (667 lines)	16.666(806 lines)
P ( ms )	0.125 ( 6 lines)	0.064 ( 3 lines)	0.060 ( 3 lines)	0.124(6 lines)
Q (ms)	0.478 ( 23 lines)	0.448 ( 21 lines)	0.784 ( 39 lines)	0.600(29 lines)
R ( ms )	12.48 (600 lines)	12.80 (600lines)	12.55 (624 lines)	15.880(768 lines)
S ( ms )	0.770 ( 37 line )	0.021 ( 1 line )	0.020 ( 1 lines)	0.062(3 lines)
SYNC. H/V	+ / +	+ / +	- / -	-/-
POLARITY				
SEP SYNC	Y	Y	Y	Y

CLASS NO.		15" TFT XGA LCD CMTR-150P3A		8639 000 11789	
		TYPE : 150P3A/00C			
		BRAND : PHILIPS			
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				A4	
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MODE NO.	13	14
RESOLUTION	1024 x 768	1024 x 768
Dot clock(MHz)	75.000	78.750
f h	56.476kHz	60.023kHz
A ( us )	17.707 (1328 dots)	16.66 (1312dots)
B ( us )	1.813 (136 dots)	1.219 ( 96 dots)
C ( us )	1.920 (144 dots)	2.235 ( 176 dots)
D ( us )	13.653 (1024 dots)	13.003 (1024dots)
E ( us )	0.320 (24 dots)	0.203 ( 16 dots)
f v	70.069Hz	75Hz (75.029)
O ( ms )	14.272 (806 lines)	13.328 (800 lines)
P ( ms )	0.106 (6 lines)	0.050 (3 lines)
Q ( ms )	0.513 (29 lines)	0.466 (28 lines)
R ( ms )	13.599 (768 lines)	12.795 (768 lines)
S ( ms )	0.053 (3 lines)	0.017 (1line )
SYNC. H/V	-/-	+/+
POLARITY		
SEP SYNC	Y	Y

### 3.3.3 Horizontal scanning

Sync polarity : Positive or Negative  
Scanning frequency : 30 - 61 KHz

### 3.3.4 Vertical scanning

Sync polarity : Positive or Negative  
Scanning frequency : 56 - 76Hz

### 3.4 Power input connection

Power cord length : 1.82.0 M  
Power cord type : 3 leads power cord with protective earth plug.

### 3.5 Power management

The power consumption and the status indication of the set with power management function are as follows,

STATUS	Horizontal On	Vertical Pulse	Power Spec Pulse	LED as normal on	Green
Stand-by	No Pulse	Pulse	< 2 W	Amber	
Suspend	Pulse	No Pulse	< 2 W	Amber	
Off	No Pulse	No Pulse	< 2 W	Amber	

Power switch off is less than 2W

### 3.6 Display identification

In accordance with DVI requirement, use DDC2B and EDID 3.0 structure 1.3.

CLASS NO.

15" TFT XGA LCD CMTR-150P3A

TYPE : 150P3A/00C

BRAND : PHILIPS

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#### 4.0 Visual characteristics

##### 4.1 Test conditions

Unless otherwise specified, this specification is defined under the following conditions.

- (1) Input signal : As defined in 3.3, 1024 x 768/75Hz mode (60.023 KHz)  
Signal sources must have 75 ohms output impedance.
- (2) Luminance setting: Set contrast to 50 % and brightness to 100 % with full white pattern.
- (3) Warm-up: more than 30 minutes after power on with signal supplied.
- (4) Ambient light: 400 -- 600 lux.
- (5) Ambient temperature: 25 +- 5 C

##### 4.2 Resolution

Factory preset modes (\* 140 modes)

Mode	Resolution	H. freq. / V. freq	Standard
1.	640 x 350	31.469KHz/70.087Hz	VGA
2.	720 x 400	31.469KHz/70.087Hz	VGA
3.	640 x 480	31.469KHz/59.940Hz	VGA
4.	640 x 480	35.000KHz/66.667Hz	Macintosh
5.	640 x 480	37.861KHz/72.809Hz	VESA
6.	640 x 480	37.500KHz/75.000Hz	VESA
7.	800 x 600	35.156KHz/56.250Hz	VESA
8.	800 x 600	37.879KHz/60.317Hz	VESA
9.	800 x 600	48.077KHz/72.188Hz	VESA
10.	800 x 600	46.875KHz/75.000Hz	VESA
11.	832 x 624	49.700KHz/75.000Hz	Macintosh
12.	1024 x 768	48.363KHz/60.004Hz	VESA
13.	1024 x 768	56.476KHz/70.069Hz	VESA
14.	1024 x 768	60.023KHz/75.029Hz	VESA

- 4.3 Brightness: 250 nits (typ.) at maximum contrast and maximum brightness  
(At center of the screen, Fig. 1)

##### 4.4 Image size

- 4.4.1 Actual display size  
304.1 x 228.1mm

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		BRAND : PHILIPS			
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## 4.5 Brightness uniformity

Set contrast at 50% and turn the brightness to get above 200 nits.  
at center of the screen  
Apply the Fig 1, it should comply with the following formula:

$$\frac{\text{Minimum (B1, B2, ..., B5)}}{\text{Maximum (B1, B2, ..., B5)}} > 80 \%$$

## 4.6 White color adjustment

There are two factory preset white color 9300K and 6500K.

Apply full white pattern, with brightness in 100 % position  
and the contrast control at 50 %.

The 1931 CIE Chromaticity (color triangle) diagram (x, y)  
coordinate for the screen center should be:

9300K CIE coordinates	X = 0.281 +/- 0.020
	Y = 0.311 +/- 0.020
6500K CIE coordinates	X = 0.312 +/- 0.020
	Y = 0.338 +/- 0.020

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## 5.0 Mechanical characteristics

## 5.1 Controls

Front:

- DC powerswitch
- OSD function key
- Volume & off control
- Base on/off
- Mute on/off

Rear:

- Video signal cable
- Power cord socket
- DC 12V flyin
- Audio in jack
- Mic. out jack
- USB hub(option)

Side:

- Earphone jack
- External Mic. in jack

## 5.2 Unit dimension /Weight

Set dimension (incl.pedestal): 343W x 354H x 179D  
Net weight: 4.6 Kg

## 5.3 Tilt and swivel base

Tilt angle: -5 to +25  
Swivel rotation: +/- 175

## 5.4 Transportation packages

## 5.4.1 Shipping dimension/Weight

Carton dimension: 413W x 427H x 234D  
Gross weight: 5.8 Kg

## 5.4.2 Block unit / Palletization

layers/block  
9

sets/layer  
6

sets/block unit  
54

CLASS NO.

15" TFT XGA LCD CMTR-150P3A

TYPE : 150P3A/00C

BRAND : PHILIPS

8639 000 11789

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6.0 Environmental characteristics  
The following sections define the interference and susceptibility condition limits that might occur between external environment and the display device.

6.1 Susceptibility of display to external environment  
Operating  
- Temperature : 5 to 40 degree C  
- Humidity : 20% ~ 80%  
- Altitude : 0-12,000 feet  
- Air pressure : 600-1100 mBAR

Storage  
- Temperature : -20 to 60 degree C  
- Humidity : 5% ~ 95% ( < 40℃ )  
- Altitude : 0-30,000 feet  
- Air pressure : 300-1100 mBAR

Note: recommend at 5 to 35 degree C, Humidity less than 60%

6.2 Transportation tests

Standard		Philips UAN-D1400	NSTA
Drop Test	Height	76.0 cm	76.0 cm
	Sequence	1 corner 3 faces (-10deg C x 16 hrs)	1 corner 3 edge (Room temp) 6 face
	Test Result	Electrical function ok Mechanical function ok No serious damage on set appearance (Room temp -10 degree C, humidity 70 %)	
Vibration Test	Sequence	(1) PACKAGING 5-200 Hz, 0.73 G, 30 min. for Each axis	
		(2) OPERATING 10-50-10 Hz, 0.35 mm, 30 min. for Each axis	
	Test Result	Electrical function ok Mechanical function ok No serious damage on set appearance	
Bump Test	For design evaluation only Operating 10 G, 11 msec, 1000 cycles Temperature : 23 degree C Humidity : 60 % Air pressure : 100 kpa (According to DSD draft standard UAN-D636)		

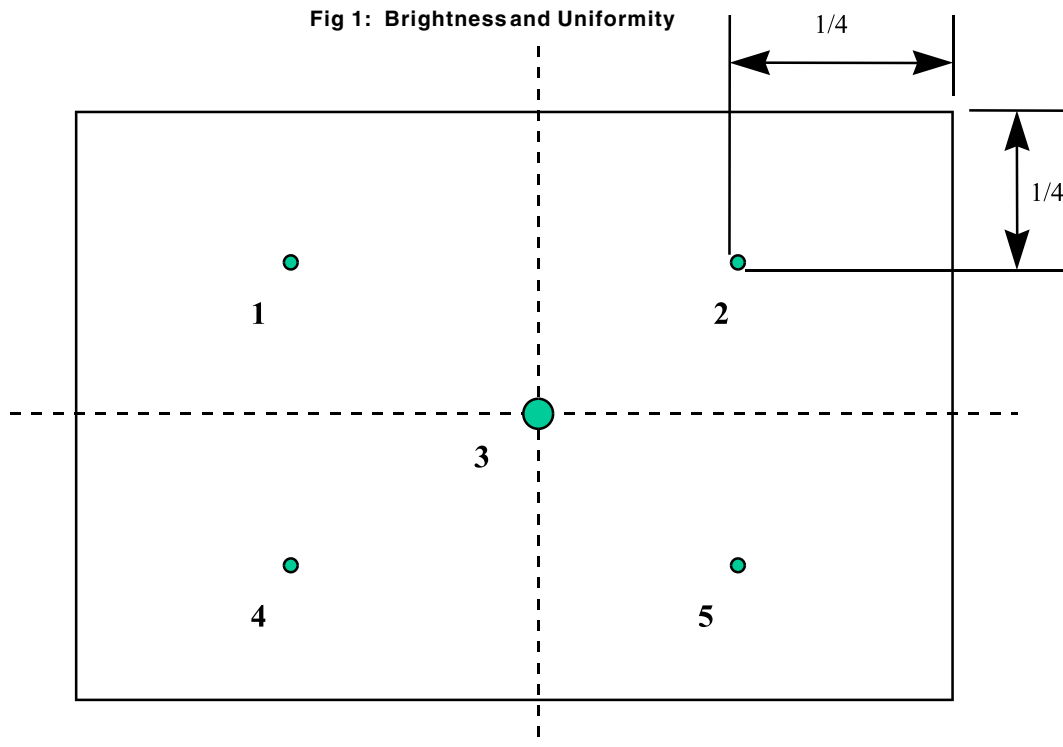
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- 6.3 Display disturbances from external environment  
According to IEC 801-2 for ESD disturbances
- 6.4 Display disturbances to external environment
- 6.4.1 EMI  
EMI: FCC, IC, VCCI, CE, C-Tick, MPRII, BSMI.
- 7.0 Reliability
- 7.1 Mean time between failures (MTBF)  
System MTBF (Excluding the LCD panel and CCFL): 50,000 hrs  
CCFL MTBF: 30,000 hrs
- 8.0 Quality assurance requirements
- 8.1 Acceptance test  
According to MIL-STD-105D Control II level
- AQL : 0.65 (major)  
1.5 (minor)  
(Please also refer to annual quality agreement)
- 9.0 Serviceability  
The serviceability of this monitor should fulfill the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT-0361.

Fig 1: Brightness and Uniformity



Average: 5 points average

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		BRAND : PHILIPS			
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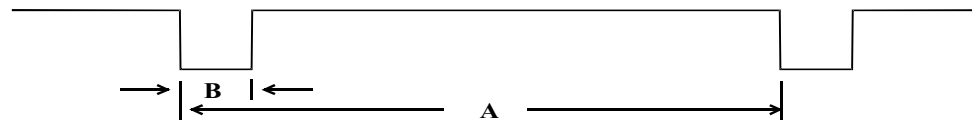


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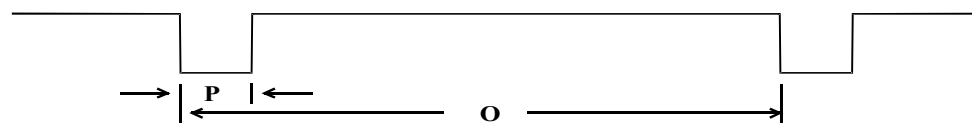
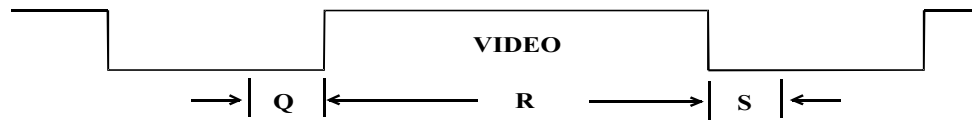
## SEPARATE SYNC.



## HORIZONTAL



## VERTICAL



## COMPOSITE SYNC.



## HORIZONTAL



FIG-2 TIMING CHART -1

CLASS NO.		15" TFT XGA LCD CMTR-150P3A				
		TYPE : 150P3A/00C			8639 000 11789	
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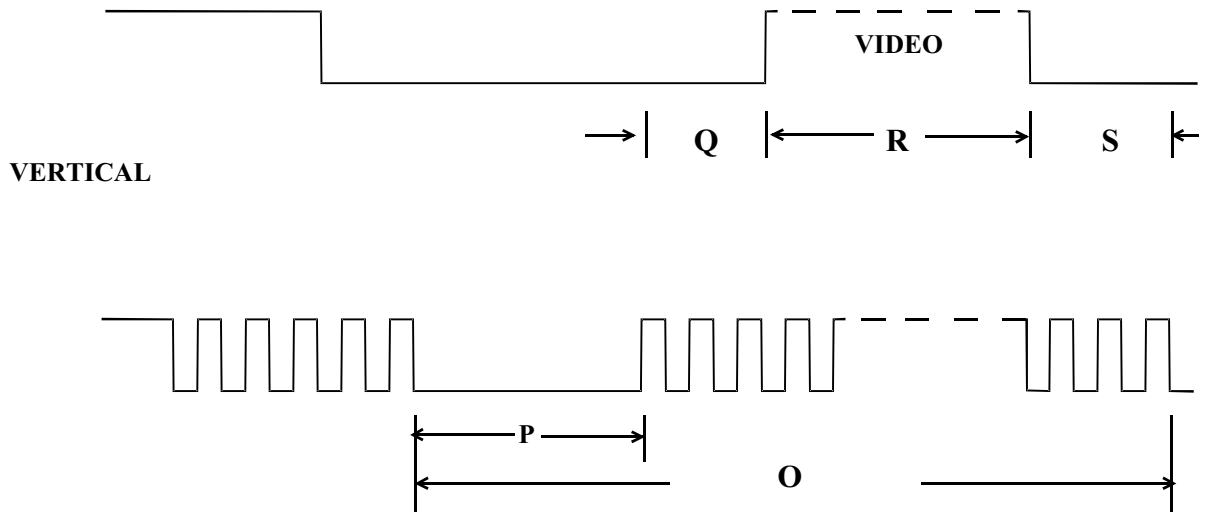
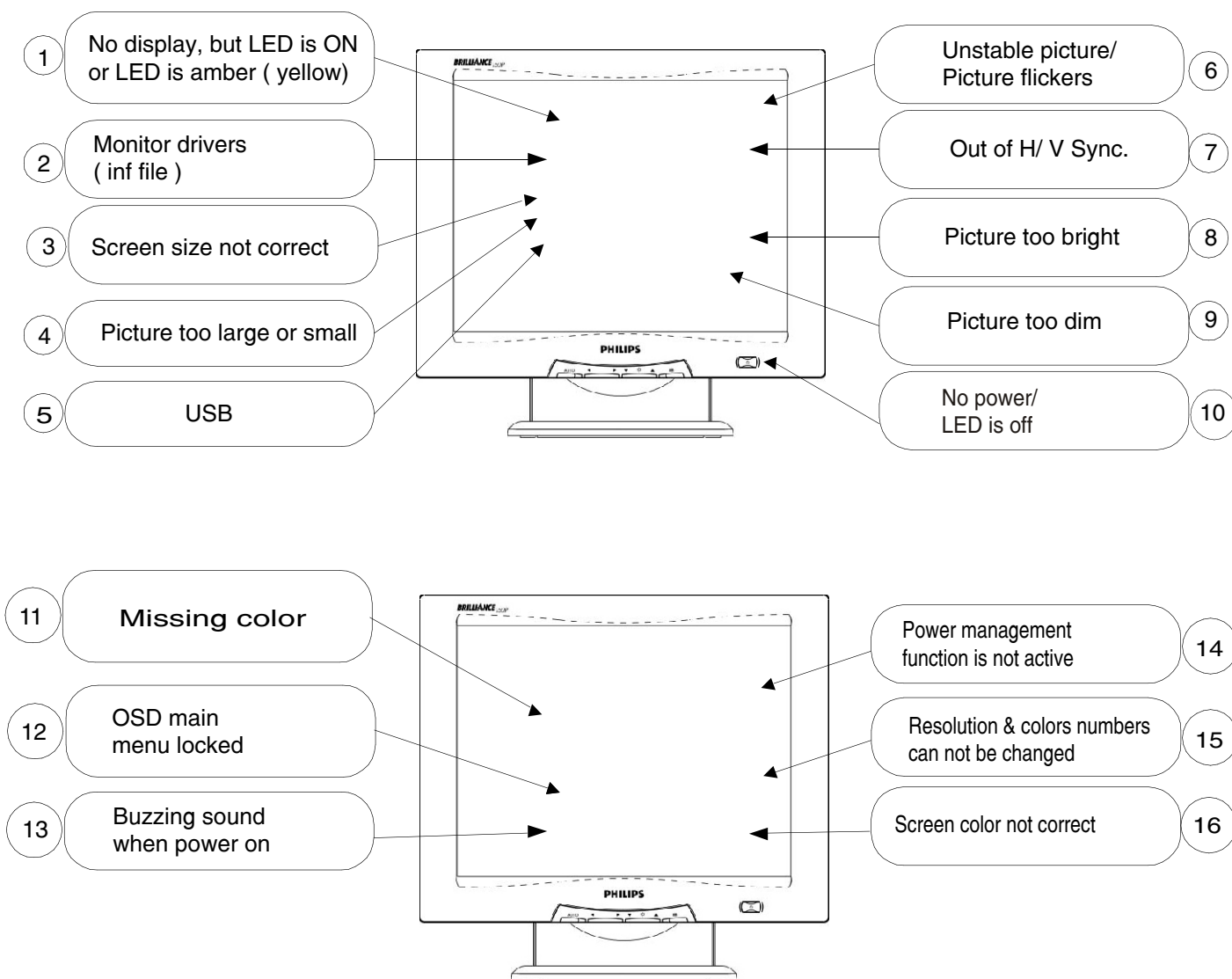


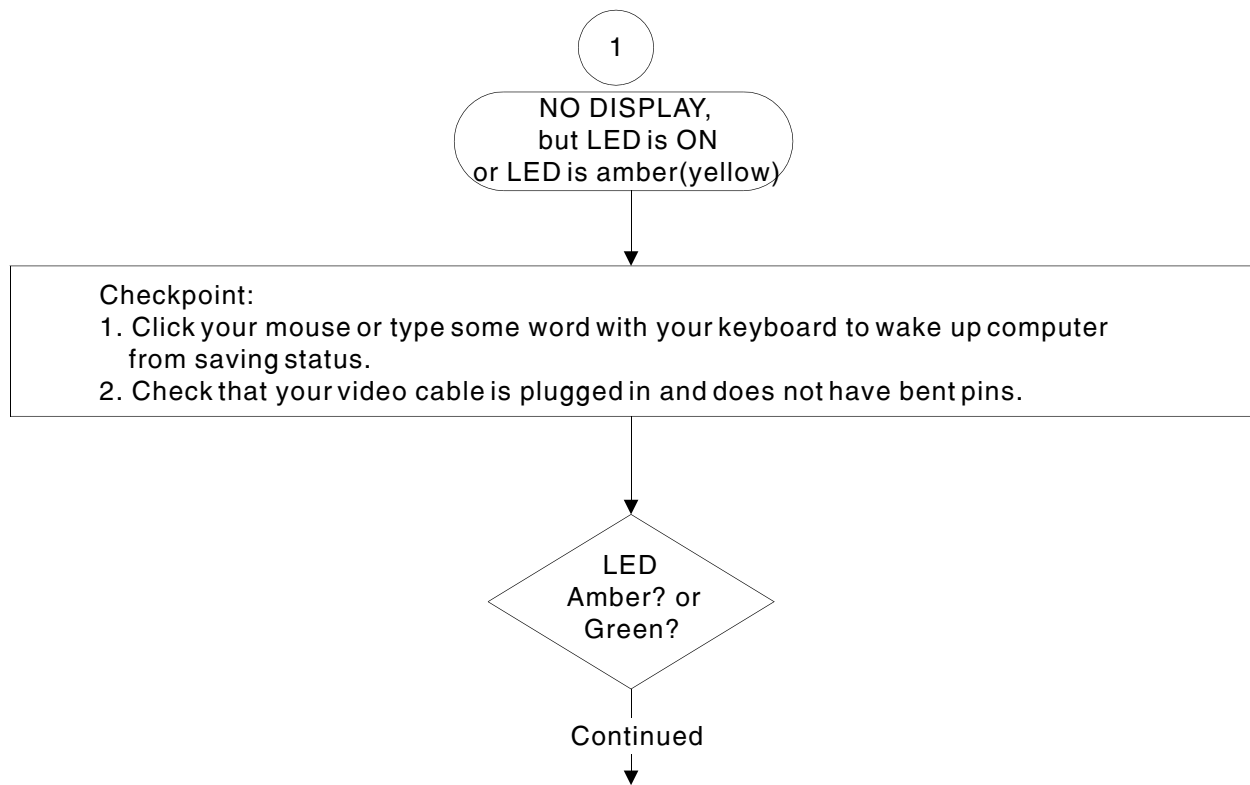
FIG-3 TIMING CHART -2

CLASS NO.		15" TFT XGA LCD CMTR-150P3A TYPE : 150P3A/00C BRAND : PHILIPS			8639 000 11789					
1-4-02										
NAME Y C Liu		SUPERS.			17	590	—	17	10	A4
TY		CHECK	DATE 1-4-02		Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.					

## General Troubleshooting Guide



## General Troubleshooting Guide (Continued)

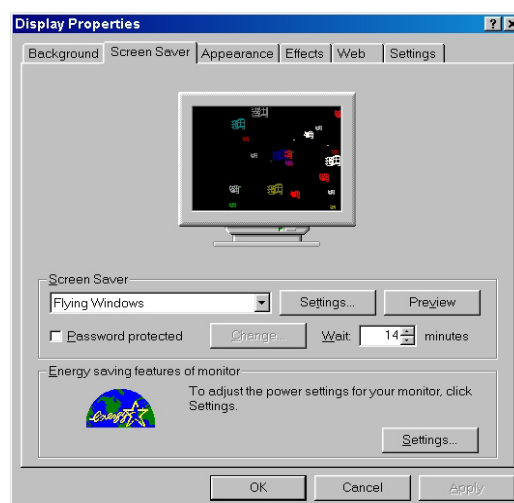


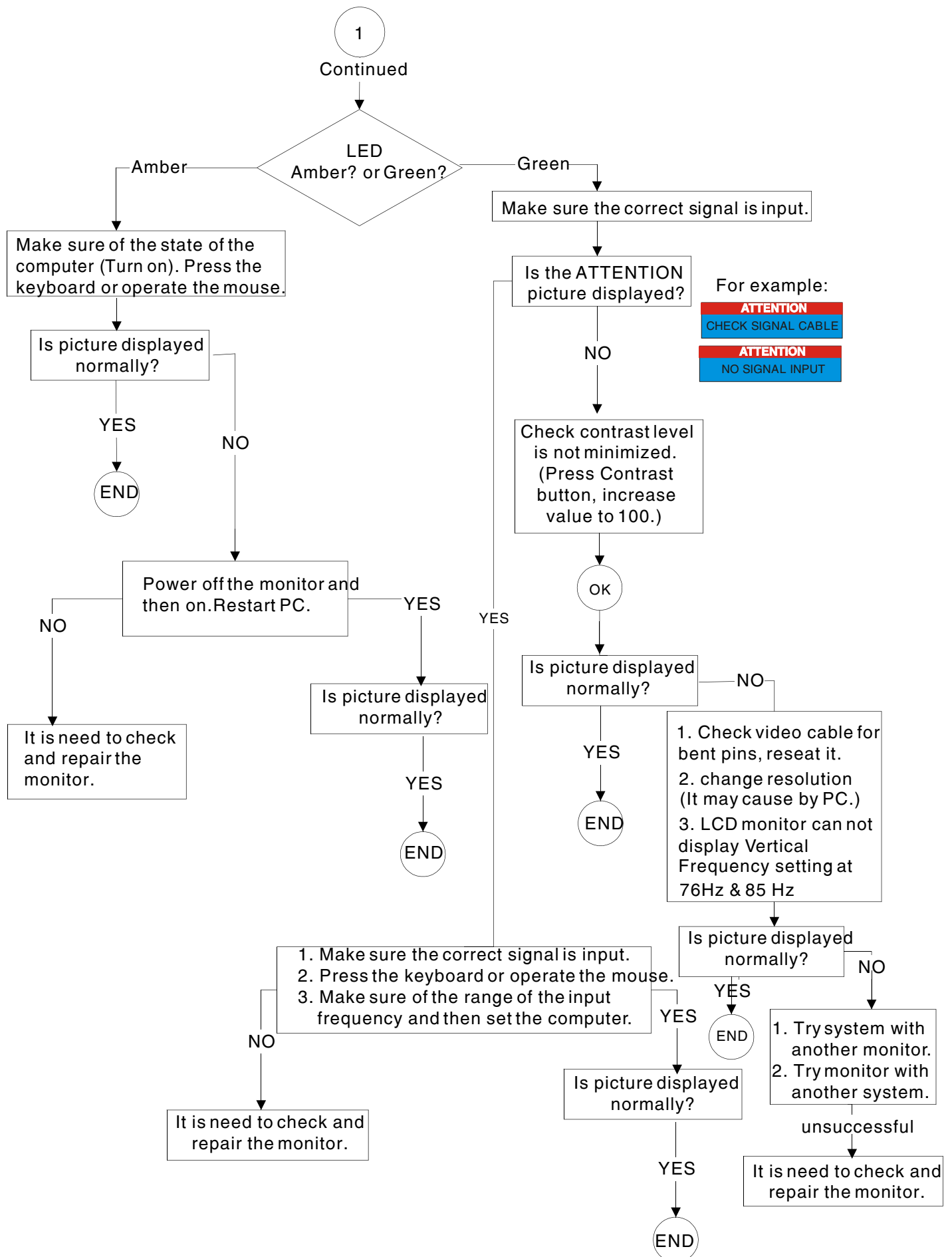
If your PC in MS Win 98 and with lots of application software.

Do not set screen saver ->Wait -> at "14" minutes.

It will cause "no display" problem as above mentioned.

Action : Restart PC and change timer setting of screen saver.







2

**Monitor drivers  
(inf file)**
**for Windows 95/98/2000/Me or later**

Philips' monitors build in VESA DDC2B feature to support Plug & Play requirement for Windows 95/98/2000/Me . You can install the information file ( .inf) in order to select your Philips monitor from "Monitor" dialog box in Windows 95/98/2000/Me to activate Plug & Play application. The installation procedure based on Windows '95 OEM Release 2 , 98 , Me and 2000 is specified as follows, (In case of connecting the monitor to the PC compliant with VESA standard with the designated signal cable, the PC reads display pixels, frequency, and color feature of this monitor to optimise the picture for the monitor automatically.)  
DDC : Abbreviation for Display Data Channel

**\*\* Windows NT 4.0 does not require driver (inf file) for monitors.\*\***

**For Windows 98**

For Windows98 drivers, our monitors are listed under 2 manufactures name "Philips", and "Philips Consumer Electronics Co". Please select "Philips" when you would like to set up your monitor in Windows setting , if you can not find the right model name just as the label indication on the back of set. For those set that have been issued since the release of Win98 , drivers can be found in CDROM under the directory path of " \pc\ driver \" or it may be downloaded at "http: \www.philips.com". Once you have installed the new driver , Windows will add a new manufacture name "Philips Business Electronics" in your system.

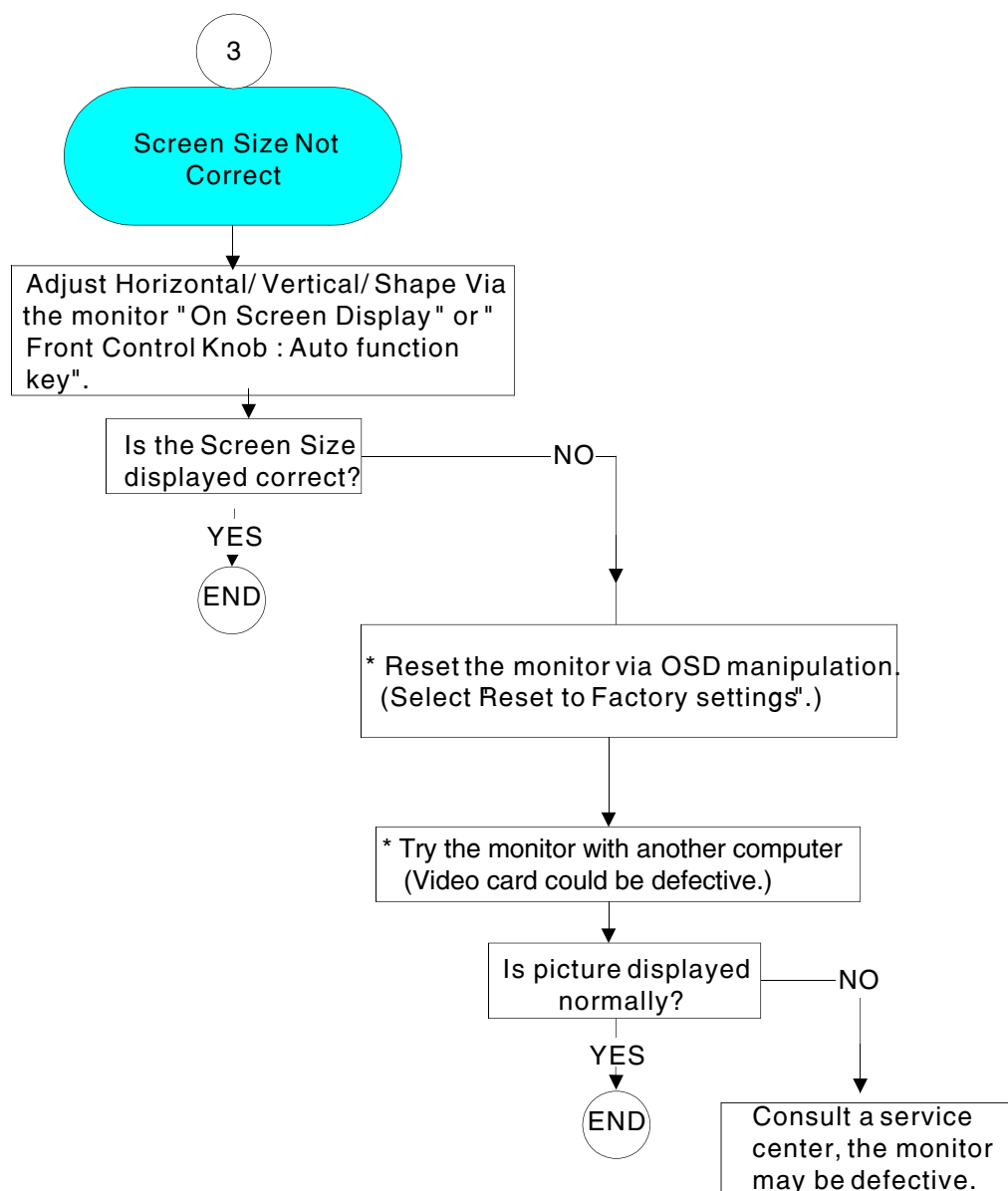
**For Windows Me**
**For Windows 2000**
**For Windows 95**

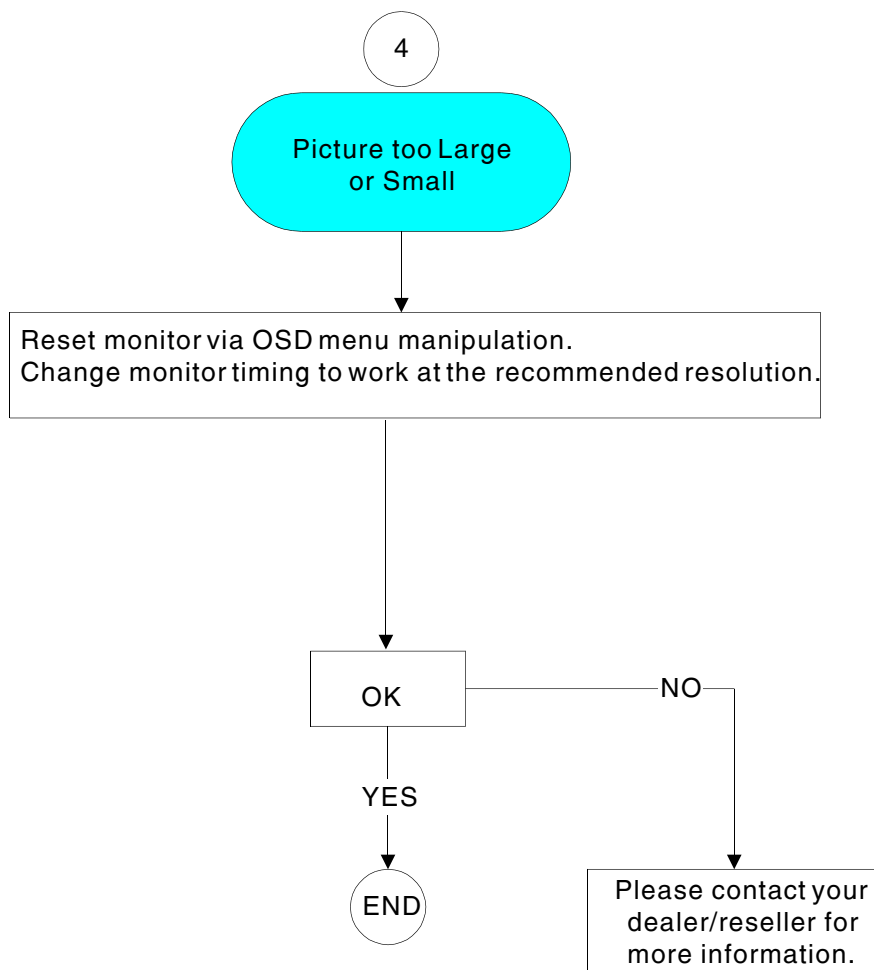
For Windows95 drivers , your monitor is listed under manufacture name "Philips Business Electronics Co.".

1. Start Windows '95
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.  
5. Choose 'Monitor' button, point to 'Change...'  
then click 'Have Disk...'.  
6. Click 'Browse...' button then choose the appropriate drive F: ( CD-ROM Drive) then click 'OK' button.
7. Click the 'OK' button then choose your monitor model and click the 'OK'.
8. Click 'Close' button.

1. Start Windows 98
  2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
  3. Double Click the 'Display' Icon.
  4. Choose the 'Settings' tab then click 'Advanced...'.  
5. Choose 'Monitor' button, point to 'Change...'  
then click 'Next'  
6. Choose "Display a list of all the drivers in a specific location, so you can elect the driver you want." then click 'Next' and then click 'Have Disk...'.  
7. Click 'Browse...' button then choose the appropriate drive F: ( CD-ROM Drive) then click 'OK' button.
  8. Click the 'OK' button then choose your monitor model and click the 'Next' button then click 'Next' button.
  9. Click 'Finish' button then the 'Close' button.
1. Start Windows Me
  2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
  3. Double Click the 'Display' Icon.
  4. Choose the 'Settings' tab then click 'Advanced...'.  
5. Choose 'Monitor' button, then click 'Change...'  
button.  
6. Choose "Specify the location of the driver (Advanced)" and click the 'Next' button.
  7. Choose "Display a list of all the drivers in a specific location, so you can select the driver you want." then click 'Next' and then click 'Have Disk...'.  
8. Click 'Browse...' button then choose the appropriate drive F: ( CD-ROM Drive) then click 'OK' button.
  9. Click the 'OK' button then choose your monitor model and click the 'Next' button then click 'Next' button.
  10. Click 'Finish' button then the 'Close' button.

1. Start Windows 2000
2. Click the 'Start' button, point to 'Setting', and then click 'Control Panel'.
3. Double Click the 'Display' Icon.
4. Choose the 'Settings' tab then click 'Advanced...'.  
5. Choose 'Monitor'  
- If the 'Properties' button is inactive, it means your monitor is properly configured. Please stop installation.  
- If the 'Properties' button is active. Click 'Properties' button. Please follow next step continually.
6. Click 'Driver' and then click on 'Update Driver...' then click on the 'Next' button.
7. Choose "Display a list of the known drivers for this device so that I can choose a specific driver" then click 'Next' and then click 'Have disk...'.  
8. Click 'Browse...' button then choose the appropriate drive F: ( CD-ROM Drive).
9. Click the 'Open' button, then click the 'OK' button.
10. Choose your monitor model and click the 'Next' button then click 'Next' button.
11. Click 'Finish' button then the 'Close' button.  
If you can see the "Digital Signature Not Found" window then click the 'Yes' button.





5

**USB**

USB = Universal Serial Bus

USB is the simple way to connect peripherals to your computer. It can be used to attach a wide variety of devices like scanners, cameras, keyboards, mice, speakers, printer ..etc.

Using USB devices (Operating Systems support USB) :  
It depends on two things: hardware and software.

**Hardware** : You need a USB port in your computer. This can either be built in (most PC's build in 1999 and Apple's iMac) or from a plug in card. A number of vendors sell PCI and CardBus USB adapters which can add USB capabilities to your older computer.

**Software-wise** for Wintel computers, you need either **Windows 98, Windows 95 OSR 2.1** (although Windows 98 has better USB support than Windows 95), **Windows 2000**. For Apple Macintosh computers you need **MacOS 8.1 or later**.

USB automatically determines resources (like driver software and bus bandwidth) required by peripherals.

USB makes necessary resources available without user intervention.

It is designed to meet Microsoft Plug and Play (PnP) specification, meaning users can install, and hot-swap devices without long installation procedures and reboots.

It allows 127 devices to run at the same time on the bus.

USB bus provides two types of data transfer speed -- 1.5Mbps and 12Mbps and it can provide a maximum of 500mA of current to devices attached on the bus.

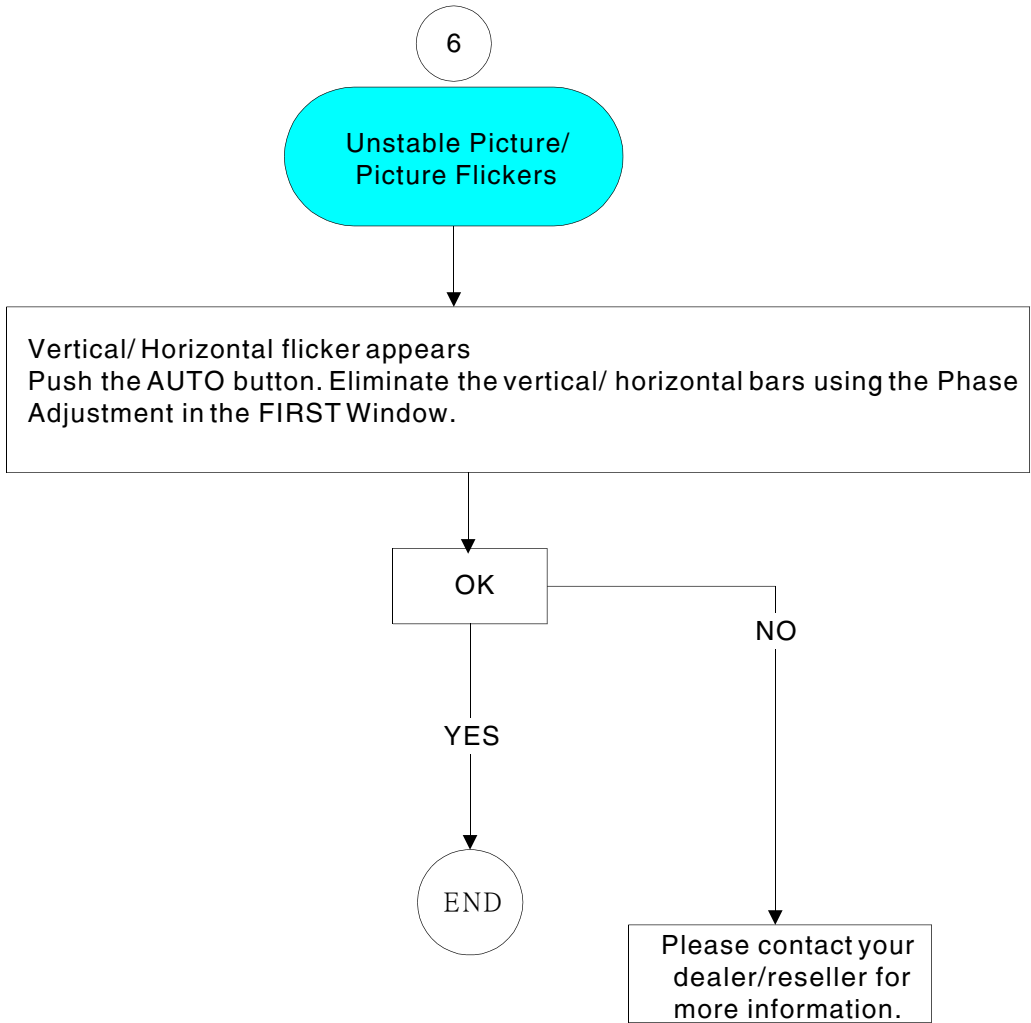
Universal means all peripherals share the same connector.

Serial simply defines devices can daisy chain together.

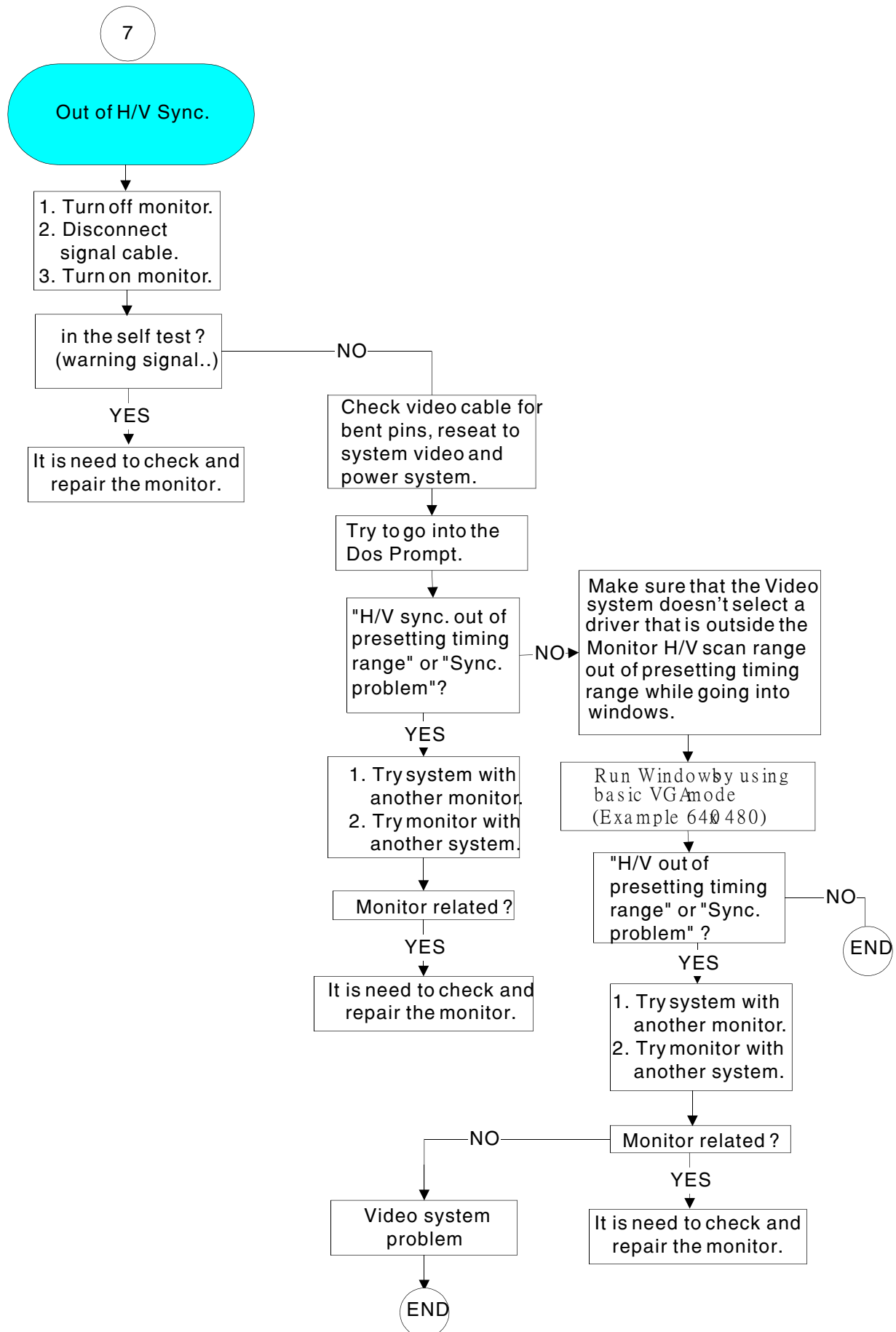
Universal Serial Bus 1.1, the de facto external connectivity standard for Mac and PC, has picked up the speed after its slow adoption by peripheral manufacturers, users and PC OEMs.

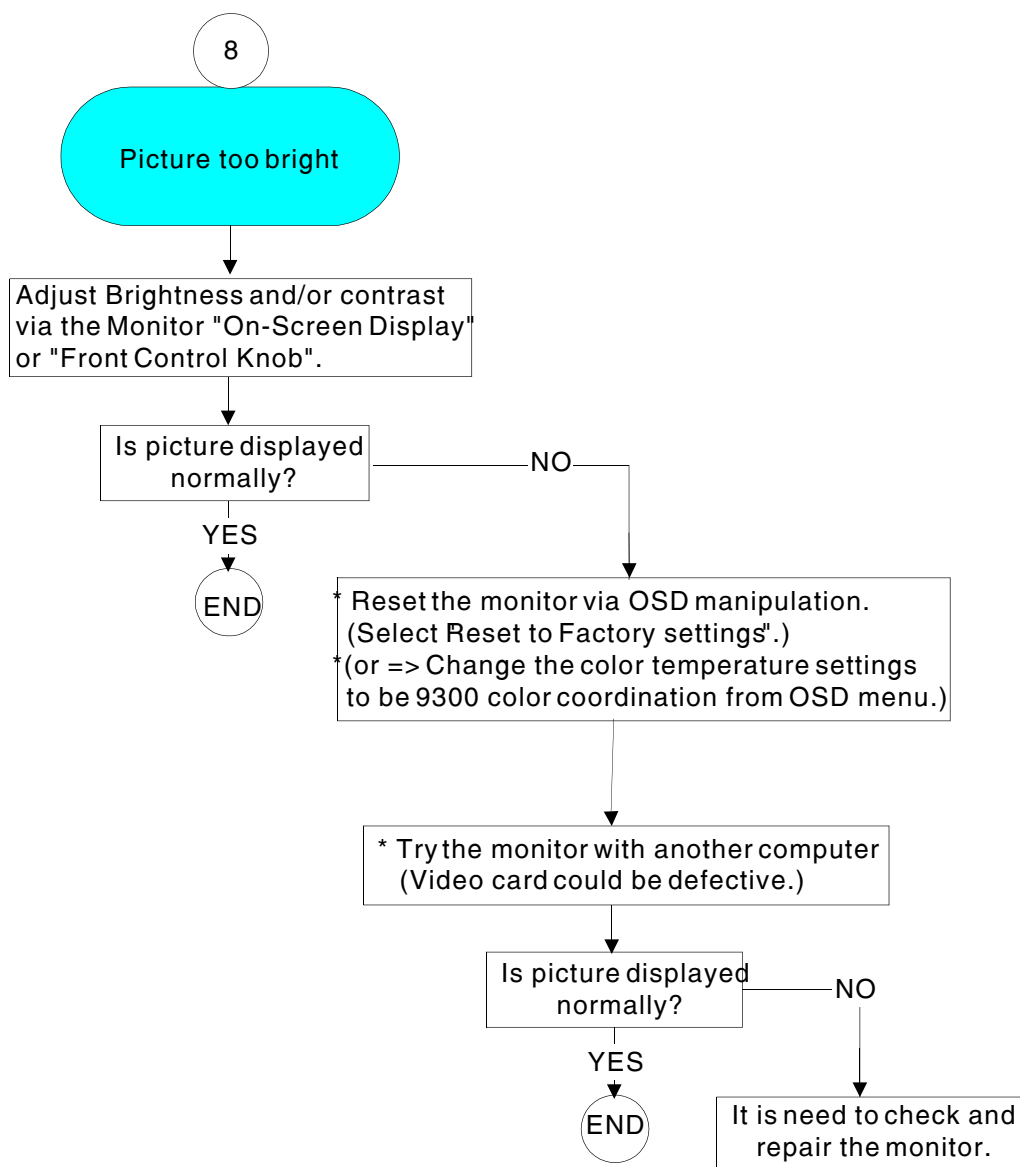
USB 2.0 :

Drafted by Compaq, Hewlett Packard, Intel, Lucent, Microsoft, NEC and Philips, USB Specification version 2.0 will increase device data throughput up to 480Mbps, 40 times faster than USB 1.1 devices.









9

Picture too dim

Note :

1. Sun light passing through a window is much brighter than monitor luminance (Luminance is the measurable quantity which most closely corresponds to brightness), therefore the two worst places for a monitor is directly facing the window or directly behind the window. Position the monitor away from these two areas.

Adjust Brightness and/or contrast via the Monitor "On-Screen Display" or "Front Control Knob".

Is picture displayed normally?

YES

END

NO

Is an external Anti-Glare screen (like protective cover, touch screen..etc.) being used ?

Remove any external Anti-Glare screen.

Is picture displayed normally?

YES

END

NO

\* Reset the monitor via OSD manipulation. (Select Reset to Factory settings".)  
 \*(or => Change the color temperature settings to be 9300 color coordination from OSD menu.)

\* Try the monitor with another computer (Video card could be defective.)

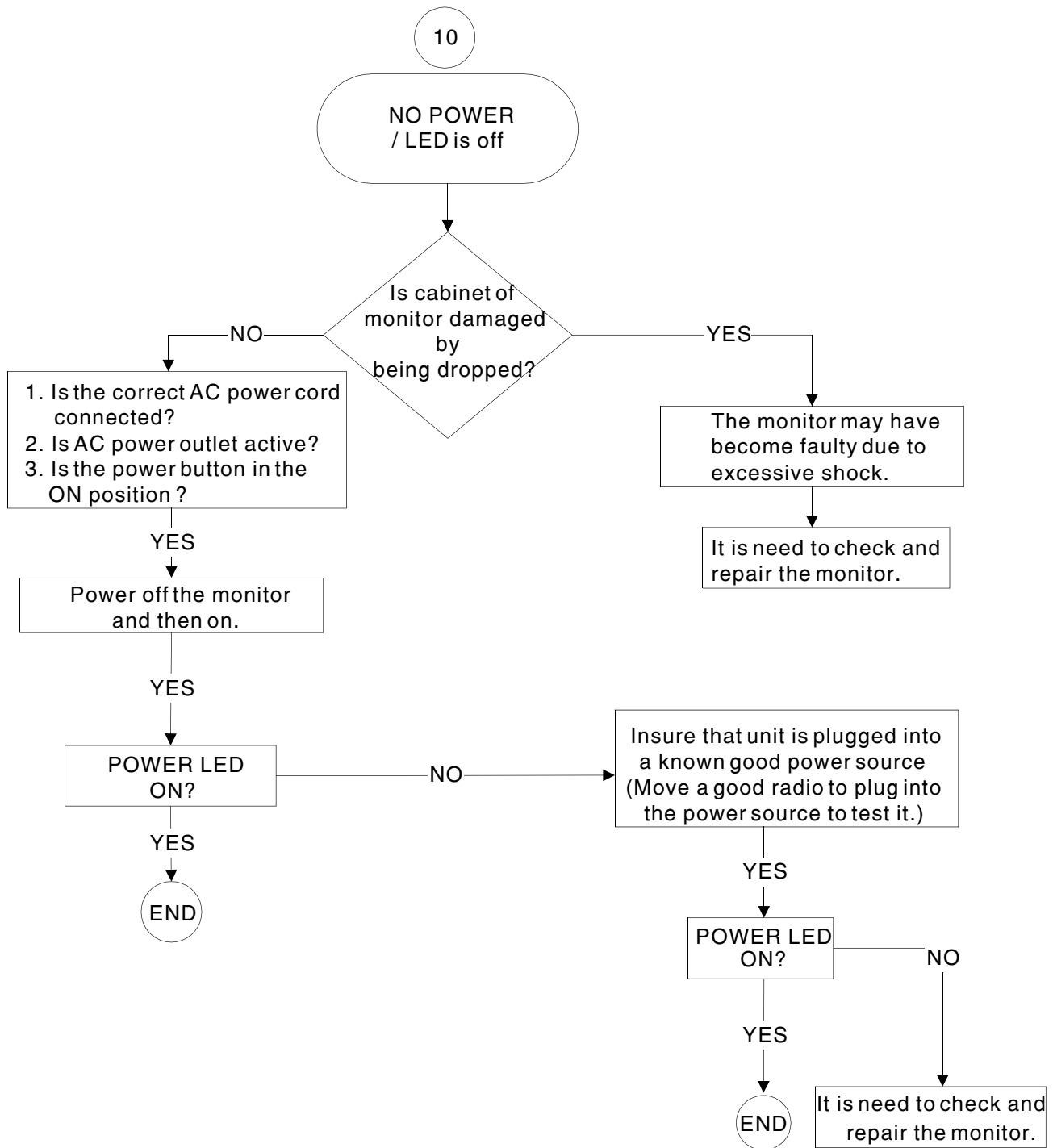
Is picture displayed normally?

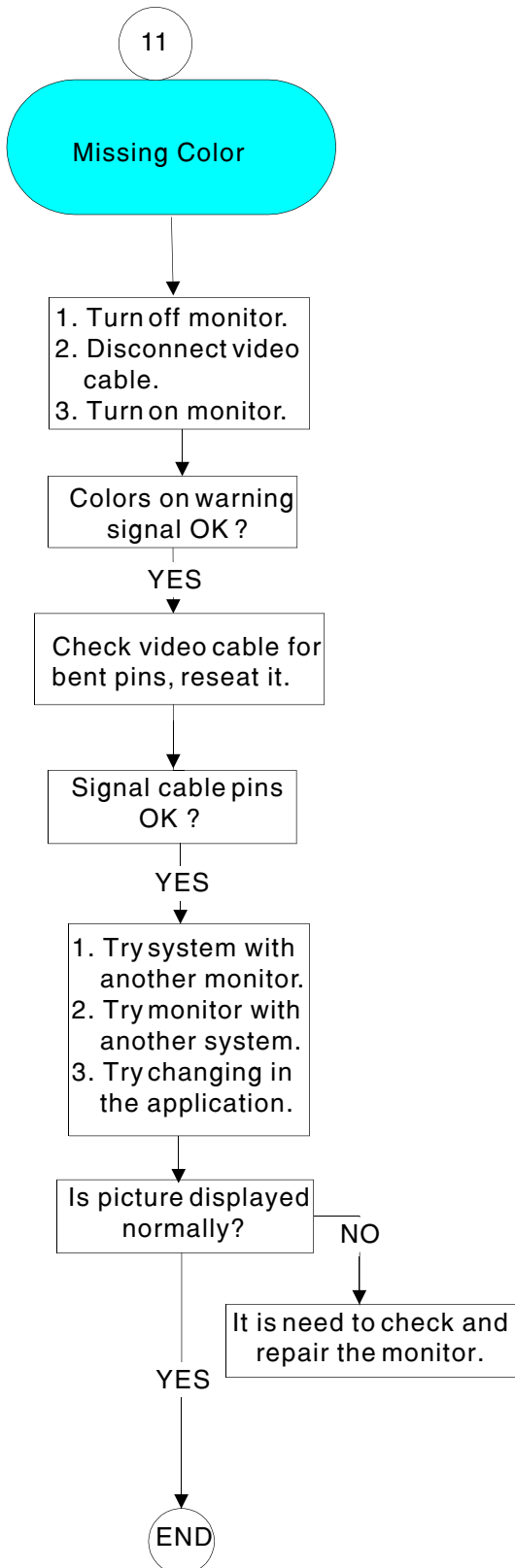
YES

END

NO

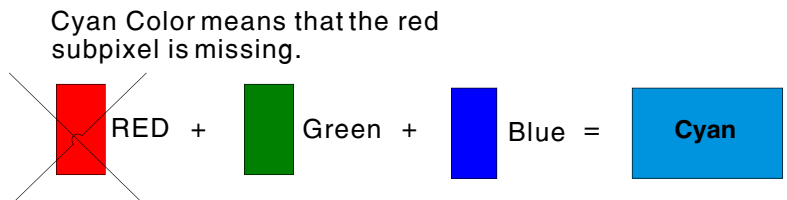
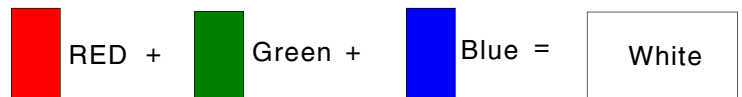
It is need to check and repair the monitor.



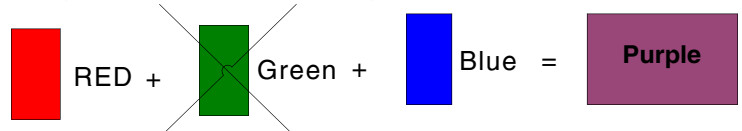


There are 2 easy ways to determine the Missing color problem.

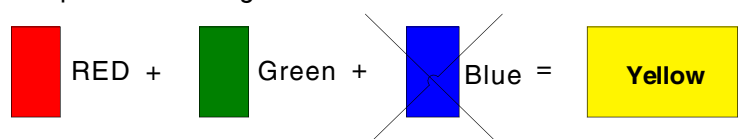
1. View an image that is supposed to be "White".  
If one of the colors (RGB) is not functioning.  
White can not be produced.
2. View an image that supposed to contain Red, Green and Blue.  
Color problems will be apparent when one or more of these colors can not be displayed.



Magenta or Purple Color means that the green subpixel is missing.

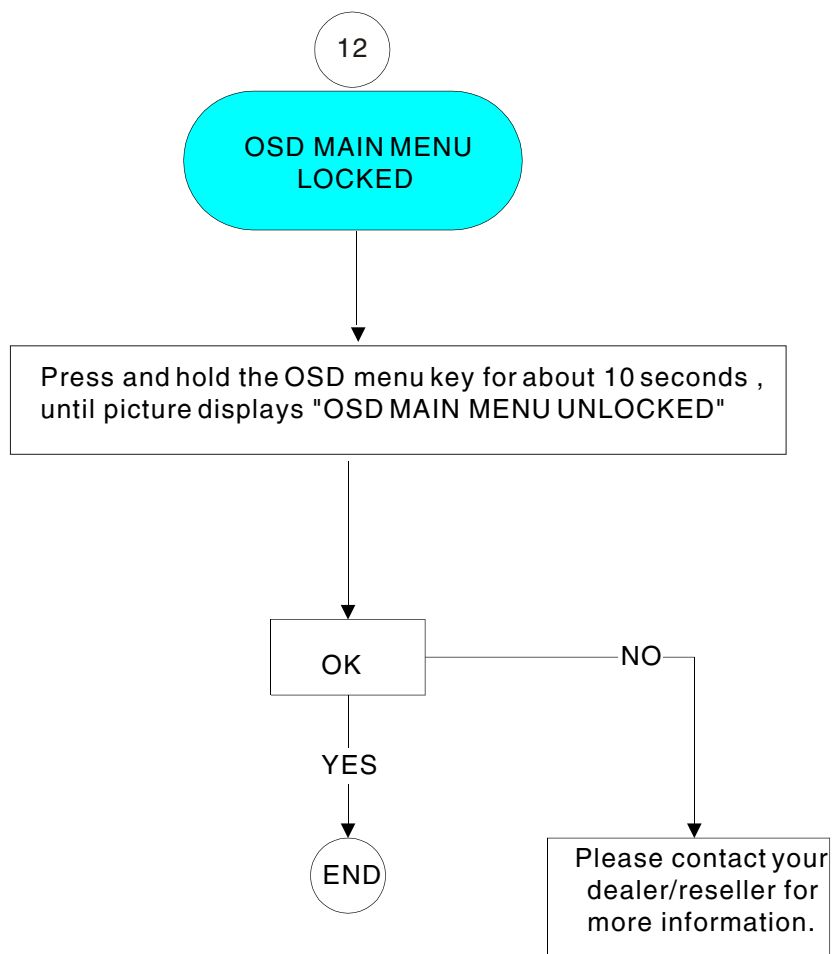


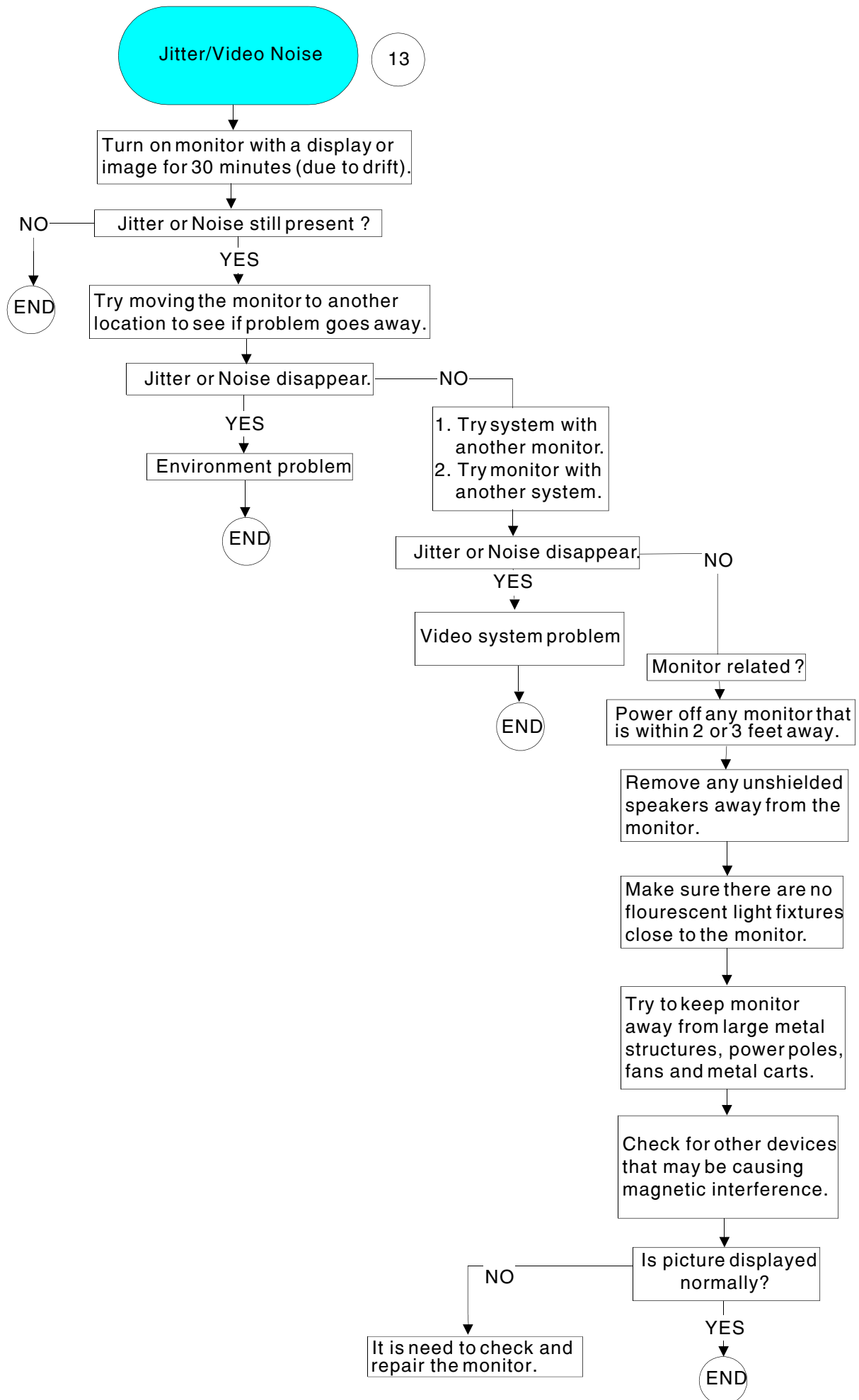
Yellow Color means that the blue subpixel is missing.

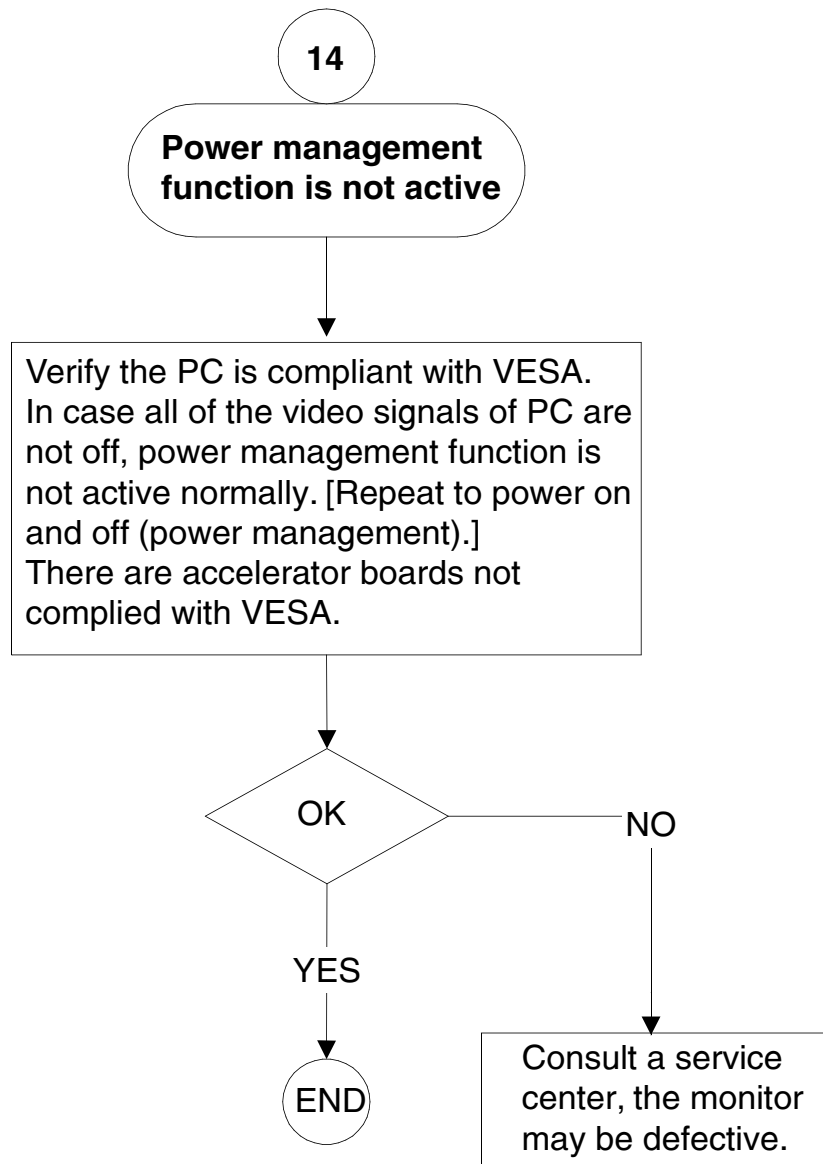




## General Troubleshooting Guide (Continued)







## 150 P3C Audio Base

30	313815752741	BEZEL ASSY-150P3(B)
31	313815405731	BEZEL(B ABS-HB)
40	313815752771	BACK COVER ASSY-DUAL(B)
41	313815405741	BACK COVER(B ABS-HB)
1087	313812874931	Main Cord
1091	823827711691	AUDIO BASE ASSY



## 150 P3E Ergo Base

30	313815752071	BEZEL ASSY-150P3(T)
31	313815404581	BEZEL(T ABS-HB)
40	313815752331	BACK COVER ASSY-DUAL(T)
41	313815404591	BACK COVER(T ABS-HB)
450	313815631891	CARTON-150P3E
451	313815632231	CUSHION-R-150B3B
452	313815632241	CUSHION-L-150B3B
601	313811703761	E-D.F.U. ASSY
1087	313812876071	Main Cord
1091	313815852991	Ergobase + wire Assy



## 150 P3D Ergo Base

30	313815752741	BEZEL ASSY-150P3(B)
31	313815405731	BEZEL(B ABS-HB)
40	313815752771	BACK COVER ASSY-DUAL(B)
41	313815405741	BACK COVER(B ABS-HB)
450	313815632471	CARTON-150P3D
451	313815632231	CUSHION-R-150B3B
452	313815632241	CUSHION-L-150B3B
601	313811703761	E-D.F.U. ASSY
1087	313812874931	Main Cord
1091	313815853211	ERGO BASE (BLK)+WIRE ASSY

